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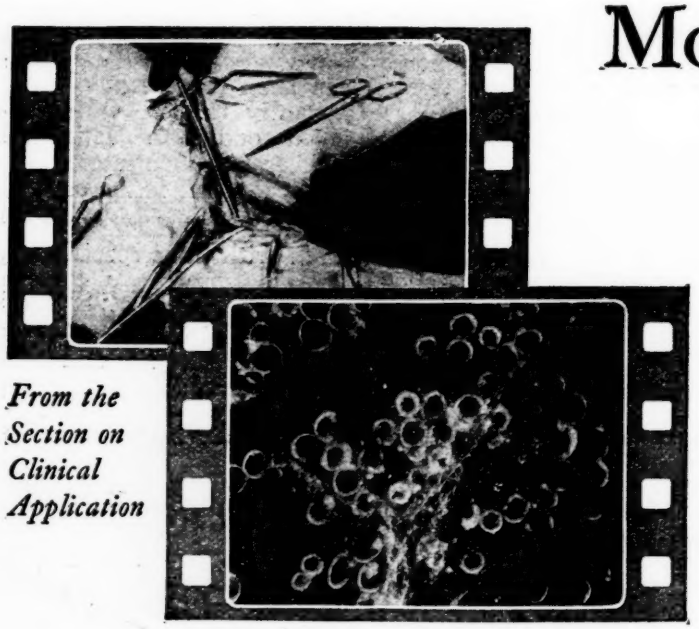

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A Lecture
ON
THE DEBILITATED CHILD.*

BY
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WE are living at a time when prevention of disease and the recognition of its earliest signs are being called for in no uncertain voice, and those of us who are specially engaged in work amongst children realize only too well the difficulties met with in the understanding and interpretation of defects in health at an age period when one would expect the problem to be in its simplest form.

The system in vogue in this country, while it offers liberty of the subject and free choice of doctor, has the disadvantage that it leaves the decision as to whether the child needs medical attention to the parent rather than to the expert. No doubt the development of the school medical service will do a great deal to remedy this. Many abnormalities which we, as experts, recognize as evidence of health defect, possibly of a serious nature, are looked upon by parents as part of the natural development of the child. Pains in the legs are growing pains, nervous conditions are due to worms, refusal to gain weight proves that the child is wiry and following in his father's footsteps, or the child's C3 condition is accepted as evidence of a delicate constitution inherited from the mother's side.

I have met with some twenty children with established acquired heart disease who had not at any time been under medical treatment. In none of these children had there been a history of chorea or joint rheumatism, and in five of them the most detailed inquiry failed to elicit from the parent evidence of any health disturbance whatsoever. Personally I refuse to believe that a child can acquire valvular disease without there having been some degree of health disturbance during its development. As one who has worked in a large out-patient department for some fifteen years, during eight of which my patients have been children, nothing has impressed me more than the large number of children who are brought with health defects which are accompanied by no gross physical signs, yet whose disabilities are more or less serious, frequently chronic, and most baffling in their refusal to respond to any treatment we can offer in hospital practice.

I have deliberately chosen the title "The debilitated child" in order to allow myself freedom to discuss the subject from any point of view. I prefer not to use the word "delicate" because this infers congenital weakness. While a certain minority of these children are undoubtedly the victims of a bad start in life, I am convinced that the majority acquire ill health for reasons and from causes which I propose to touch upon in this lecture.

The debilitated child is brought to us for many reasons, and his health abnormalities can be viewed from different angles. The majority of these children are found among the hospital class, though by no means an inconsiderable minority are found amongst the children of the well-to-do. I am going to deal with the age period 3 to 12 years—most of the cases range between 5 and 10 years—and I can best develop my subject by giving a list of the symptoms presented by these children and noticed during periods of observation varying from a few months to several years.

The first perfectly just criticism will be that I am bunching together a number of entirely different conditions. My answer is that I am merely stating the actual symptoms of a large group of children whose histories repeat themselves with monotonous frequency, and whose appearance, behaviour, and physical condition seem to indicate that they have some features in common which make it desirable that they should be studied, at least in the first instance, as a group. Can we make any kind of order out of this seeming confusion?

*Abstract of a British Medical Association Lecture delivered to Darlington Division.

Analysis of the Symptoms of the Debilitated Child.

Numerical frequency of symptoms presented by (A) 300 debilitated children, compared with relative frequency of the symptoms in four arbitrary subgroups—namely: (B) 121 toxic debility or rheumatic type cases, (C) 61 supposed tuberculous cases, (D) 55 cases of "chronic intestinal dyspepsia," and (E) 63 "nervous" children.

	A.	B.	C.	D.	E.
Nervousness	203	68	38	39	63
Loss of appetite	267	86	44	48	42
Wasting or "no gain"	203	74	47	37	45
Tired feelings	164	67	38	30	29
Pallor or "faints"	152	54	30	33	35
Disturbed sleep	147	60	24	26	37
Constipation	145	56	26	34	29
Limb pains	120	38	23	20	29
Headaches	107	49	20	18	20
Threadworms	97	29	20	29	19
Abdominal pain	91	32	15	25	19
Habit spasm	79	16	5	7	31
Bilious attacks	51	22	7	15	7
"Sweating"	50	13	22	9	9
Nocturnal enuresis	48	9	7	9	21
Sore throats	41	27	6	3	5
"Swollen glands"	37	21	6	5	5
Loose stools	33	7	7	12	7
Latent chorea	29	13	2	0	12
Pain in the side	28	12	8	5	3
Depraved appetite	21	8	5	5	3

Without for the moment committing ourselves to an opinion as to the production of these symptoms, we can at least view them as belonging to three main groups: (1) those related to the digestive system and intestinal tract, in which group we would place abdominal pain, constipation, and loss of appetite; (2) those suggesting the presence of a toxaemia—for example, aching limbs, tired feelings, listlessness, and headaches; and (3) those related to disturbances of the nervous structures—namely, nervous irritability, fidgety states, habit spasm, disturbed sleep, nocturnal enuresis, and nervous unrest generally. The children frequently seem to classify themselves in this way, certain symptoms being so prominent that we label this child as an example of chronic intestinal dyspepsia (or, as Reginald Miller[1] has designated him, the "intestinal child"); another child, with aching limbs, tired feelings, and want of energy, pointing to the presence of toxaemia, we may label as "toxic debility" or the "rheumatic type"; while a third child we may label "nervous" because of the prominence of the nervous manifestations. The symptoms of another child may suggest the possibility of tubercle, in that wasting, cough, catarrhal bronchial tubes, and sweating are prominent in the history obtained from the parent. I want, however, to make it quite clear that any such grouping of symptoms and children is arbitrary, and is carried out merely to call attention to certain types which present themselves at the clinic. Too much pigeon-holing and classification may lead to failure to appreciate the main underlying defects. We find that nervousness of some degree is common to all groups, that loss of appetite is found as frequently in other groups as it is in the child classified as "intestinal," and that constipation, loss of weight, and sweating are to be found distributed among all types. In order to show this I have compared the four subgroups with the main group as a whole.

The clinical examination also reveals certain physical characteristics which are more or less common to all the

groups. The children are underweight, pale; sometimes sallow, and many have dark rings under their eyes. They are usually fidgety, and some show habit spasm, and generally they give the impression of being timid and apprehensive. Their muscular systems are toneless and poorly developed, and this tends to produce stooping and general "flop," which results in an exaggeration of the natural curves of the spine and prominence of the abdomen. In a proportion of the children the abdomen actually is slightly distended. The glands in both triangles of the neck are more easily felt than in a healthy child, and this is specially true of the glands of the posterior triangles. This is not merely a local enlargement, as the axillary glands are nearly always felt to a degree unusual in the healthy child, and sometimes the hyperplasia is very evident. The tonsils are frequently enlarged and sometimes unhealthy in appearance; evidence of adenoids is not uncommon. Needless to say, the degree of physical defect varies from case to case, and in many the degree of physical debility has not reached a stage recognizable by the parent, who may assure us that the child was perfectly well until a week or two previously, when a particular symptom manifested itself.

The Explanation of the Symptoms.

What explanation can be offered for these symptoms? In discussing this I must refer to the subject of diathesis, which has been revived during recent years. The expressions lymphatic, exudative, nervous, rheumatic, and tuberculous have been used from time to time. I doubt whether they have done more than to make confusion worse confounded.

Dr. H. C. Cameron[2] has suggested the division of children into two main groups—namely, the exudative diathesis group, which includes the old scrofula type, and the neuro-arthritic group. He believes that the two types are the result of inherited constitutional peculiarities which make the child react differently to abnormalities of his environment. Cameron regards catarrhal affections generally, glandular enlargements, and the tendency to rheumatic and tuberculous affections as characteristic of the former group, and nervous upsets, cyclical vomiting, vasomotor disturbances, and lack of energy as characteristic of the latter group. My own feeling is that the insistence upon a diathesis as an explanation for the way in which the child responds to infection and environmental stimuli is not without value in some cases, but I doubt whether it is possible in the majority of children to make any such differentiation. I fancy it is better to accept each case on its merits rather than endeavour to judge it in the light of a preconceived theory of diathesis, although it must be confessed that Cameron's "nervous child," with his special liability to metabolic upsets, is very true to life.

The Nervous Child.

Though no one explanation adequately covers all cases, certain facts and probabilities may be admitted. Nervousness is of two main types. There is the unrestrained and more positive type, in which the nervousness is more active and insistent; the children of this type are highly strung, emotional, restless, and mentally alert, though lacking the ability to concentrate; they are specially prone to habit spasm, so-called latent chorea described by Reginald Miller,[3] tired feelings, aching limbs, nocturnal enuresis, bilious attacks, and headaches. In the second and, in my opinion, more common type the child is characterized by irritability of temper, fretfulness, and timidity. I would, however, again emphasize the point that there is no clear line of distinction, the majority of our cases presenting nervous symptoms in all kinds of groupings and in combination with other abnormalities in a way that makes it hopeless to attempt classification. There is, however, no doubt that only in a minority of these children is there an inherited nervous instability, but while symptoms such as habit spasm, bed-wetting, and night terrors may occur in children who by no stretch of the imagination could be called debilitated, it is when the child with the inherited instability become debilitated that these nervous symptoms are acutely developed. But taking nervousness generally, I would say that the large majority of nervous children acquire their nervous instability during life, and that it is among debilitated children that the majority of the nervous cases are to be found.

The Causes of Acquired Nervous Instability.

While agreeing that the environment, in which are included parental care, bad hygiene, and excessive mental and physical stimulation, will accentuate the condition, it is my belief that the two chief factors producing nervousness are chronic toxaemias and deficiencies in the diet. The deficiency is usually not in total calories—these children are not starved children in the true sense of the word—but a relative deficiency in one or more essential constituents, which, acting over a prolonged period, gradually brings about debility and damage of the delicate nervous structures of the growing child. I[1] have myself pointed out that many of the symptoms of these debilitated children can be legitimately grouped under the heading of rheumatic toxaemia. All authorities are agreed that nervous instability forms an important part of the rheumatic picture, and the question at issue would therefore appear to be this: Is the nervous instability evidence of an inherited diathesis favourable to the development of the rheumatic affection, or of an acquired health defect which may precede by months or years the full development of rheumatism?

The presence of toxaemia is difficult to prove or disprove, but it is not unreasonable to believe that many of these nervous phenomena are caused by toxic irritation. The toxic state may be bacterial or metabolic in origin. Cameron,[5] and recently Osman,[6] have suggested that the cause of many of the nervous phenomena is an acidosis or ketosis, and recommend as treatment the free use of sugar and the reduction of fat in the diet. We find acidosis not infrequently amongst children whose parents are endeavouring to ensure against tuberculosis by forcing on them milk foods and cream, and acidosis may also occur in the child whose diet does not contain excess of fat, the explanation then being that the child possesses an inherited unstable metabolism and a nervous system which are easily influenced by environmental and toxaemic stimuli.

My criticism of this explanation would be this: While agreeing that the immediate states of acidosis can be met by increasing the sugar ration, I would hesitate to believe that the prevention and cure of the debilitated state and its acidosis exists in the free use of easily assimilated carbohydrate. In the first place, the majority of these children get little but carbohydrate. Though their diet may be short in total calories it is certainly not relatively short in carbohydrate calories. A starvation diet may result in acidosis, and the child with a lost appetite may get his acidosis in this way, but this is merely a vicious circle which may be broken temporarily by the addition of sugar. The prevention and cure of the underlying condition which has led to the formation of the vicious circle is a very different problem. In the second place, acidosis is far more frequently the result of a toxaemia than it is a primary condition, and if we concentrate our attention upon the acidosis we may miss its underlying cause. I have no doubt that Dr. Cameron and Dr. Osman would be the last to insist that carbohydrate is the most important constituent of the child's diet, and any criticism I have put forward is offered rather to emphasize the importance of other constituents of the diet, specially of the protein, which of late have been relegated to a less important position than they deserve.

The throat and the alimentary tract suggest themselves as the two important points from which toxaemias may arise. The time has not yet come to define accurately the relationship of unhealthy conditions of the nasopharynx to the debilitated state; it will require a wide statistical survey over a considerable number of years before the final verdict can be given. The problem is, however, of such importance that I am bound to consider it.

Abnormalities of the nasopharynx are not confined to children of the hospital class, but I know of no figures

which give the relative incidence between one class and another. Such statistics would possibly help in deciding the factors at work causing enlargement of tonsils and adenoids. There are many who would estimate the importance of the abnormalities of the nasopharynx in this way. Enlargement of tonsils and adenoids is common to all classes. The cause of the enlargement is repeated infections, to which all are prone. Among those children who are also debilitated or whose environment is defective such reaction to infection is likely to result in a greater degree of unhealthiness of the nasopharynx, and it is likely that absorption of organisms and their toxins will take place more readily. Hence the more frequent development of symptoms due to septic absorption amongst these children. It has been stated that the reason why Eton boys are free from rheumatic infection is because 70 per cent. of them have had their tonsils and adenoids removed before joining the school. During 1922 Kaiser[7] reported from America the result of the operation upon the weights of a series of 1,200 children between the ages of 3 and 15 years. He writes:

"They were all urgent cases and presented themselves for operation because of throat symptoms, and not because of malnutrition. As compared with similar children 7 per cent. were overweight, 59 per cent. were of average weight, and 34 per cent. were underweight. After periods of six to nine months the percentages of these three weight groups were changed so that 50 per cent. of the underweight group had attained normal weight."

Obviously diseased tonsils and adenoids do not necessarily impair nutrition, but the improvement in the underweight group after their removal suggests that they may do so. Recently Paterson and Bray[8] in this country have shown that in selected cases removal of nasopharyngeal infection was followed by increase of weight and the clearing up of numerous constitutional symptoms, apart from any improvement in the local condition.

I would, however, remind you that there are other sides of the problem which require to be set off against these findings and opinions. In the first place, the numerous disturbances and symptoms which may appear in conjunction with the unhealthy nasopharynx do frequently occur in children whose throats show no abnormalities and whose glands at the angle of the jaw are not enlarged. The rheumatic affection, including heart lesions, occurs in children whose throats have been thoroughly cleared. It is not uncommon to find that certain symptoms, such as enuresis or bilious attacks, cease immediately after the operation, only to recur again after some months. This is in keeping with the peculiar way in which these symptoms will occur for a time in connexion with all kinds of psychological stimuli, and certainly one could instance cases in which enuresis started for the first time after the operation; indeed, I need hardly remind you that this operation performed upon a nervous child sometimes accentuates the nervous condition in a most distressing way. I would also point to the frequency with which aural discharge follows the operation and to the by no means infrequent development of enlargement of the cervical glands during the months or years which follow. These unfortunate happenings, and the fact that acute rheumatism, and especially chorea, occasionally follow in the wake of the operation, may, of course, be attributed to the stirring up of a germ nest, with resulting dissemination into the local structures or the system generally, and it could be said that the eradication of the germ nest was the lesser of two evils, notwithstanding the results which followed. But here again it should be mentioned that acute rheumatic chorea, which all agree is a streptococcal encephalitis, may undoubtedly follow a shock of any type.

J. H. P. Paton[9] has recently compared children who have had the operation performed with children who have not. Both groups of children belong to the professional and well-to-do class and are pupils attending a large boarding school. He writes:

"It is evident that those subjected to the operation were not only no better than the rest, but were actually worse in practically every particular with the exception of enlarged cervical glands."

My own personal impressions have been that when the local condition of the throat is obviously unhealthy and the nasopharynx is obstructed, the operation, besides remedying the local condition, does undoubtedly produce good and often striking results in the child's general health. These results, however, are often only temporary, and the symptoms not infrequently return after a few months. I have also seen children whose debilitated state seems to date from the removal of their tonsils and adenoids, and a recent review of cases has increased my belief that the rontine removal of the tonsils and adenoids of debilitated children is a mistake and should only be undertaken after a thorough review of the child's condition. I have figures which refer to 100 children who have had their tonsils and adenoids removed and 200 children who have not; both groups belong to the poorer classes of the community, and all of them come under the broad classification of debilitated children. These children have been watched for periods ranging from six months to three years, and the figures relating to the tonsillectomized group only deal with the post-operation period. I find that for each six months period the "no operation" group shows an average greater gain of weight than the "operation" group.

Of the 100 tonsillectomized children 23 had had the operation performed previous to their first attendance at my clinic, and in only 29 other cases was it possible to compare the weight gains before and after the operation. In the six months after operation 12 showed a greater gain, 14 showed a lesser gain, and 3 showed an equal gain in weight. Comparing periods of twelve months before and after the operation, 3 showed a greater gain in the year following operation, 7 showed a lesser gain, and 1 showed an equal gain.

A legitimate criticism of my figures would be that the children who ceased to attend after operation would quite likely be those who had so improved in health that further attendance was deemed unnecessary by the parent. I can only say that in a small minority who were looked up and prevailed upon to return for examination the gain in weight did not encourage me to believe that failure to attend was due to return of health. In my opinion the benefits derived from this operation have some relation to the chances of convalescence afterwards, to the type of home to which the child returns, to the state of the child's nutrition at the time, and, lastly, to the efficiency of the mother. This also may be said: anything short of complete enucleation is useless, and should be discouraged. The operation should not be undertaken in cases where the local condition does not warrant it merely on the off-chance that the child's health defect may be improved.

While discussing the influence of the toxaemias the question of tuberculosis must be mentioned. Many of these children are labelled as tuberculous or pre-tuberculous. Some 50 per cent. of them give a positive skin reaction to tuberculin, but I am confident that their debility and their symptoms are not due to tuberculous disease. Watched over a period of years they do not behave like tuberculous cases, and they do not blossom out into frank cases of tuberculosis during adolescence. The age period I am dealing with is particularly free from mortality from tuberculosis, and while risking the criticism of dogmatism I would say that frank tuberculosis arising during adolescence is usually a fresh infection developed from contact with another individual with the disease.

It may very naturally be suggested that a local gland lesion might be sufficient to produce a debilitating influence and toxaemia. This I would very much doubt, as in my experience purely local disease, when obviously present, does not produce either debility or the kind of symptoms we have been discussing.

Digestive Disturbances and Debility.

A proportion of cases of debility with symptoms referable to digestive processes could be classified at once as examples of so-called chronic dyspepsia, and severe cases fall into line with the "mucous disease" described by the late Dr. Eustace Smith.[10] But among all these debilitated children constipation or loose stools—much more frequently the

former—loss of appetite, abdominal pain, threadworms, and mucous discharge occur with considerable frequency, and it is only when these symptoms show themselves prominently in the history and clinical picture that the condition is labelled "dyspepsia." The word "dyspepsia" is unsatisfactory, as it implies local disturbance in the alimentary tract, and tends to direct our attention from the wider and more important basis upon which the debilitated state develops. I may instance in this connexion the symptoms of threadworms. Few fidgety children escape being treated for worms, the reason being that parents have learnt to appreciate how frequently threadworms appear in the stools of such children. The parasites may occur temporarily in the excreta of healthy children, yet their continued presence is an indication of an underlying state of the bowel wall which makes it possible for the worm to establish itself. Exactly similar clinical states are seen in children whose stools are free from worms, but which contain large quantities of mucous material.

We are dealing, I believe, with a constitutional and nutritional disturbance in which all the systems of the body are involved, but in which the alimentary tract and digestive function are more particularly implicated. There is an impairment of the defence mechanism, and a defect both in the secretion of the different digestive juices and in the absorbing powers of the bowel wall. If this view is accepted then, notwithstanding the assertion of the bacteriologist and the pathologist that microbic and toxic absorption from the intestinal tract is unlikely, it is not unreasonable to believe that many of these toxaemias arise within the digestive system.

It is this conception of the debilitated state which leads me to suggest that we are dealing with a health defect which belongs to the group of deficiency diseases. Authority is always emphasizing the importance of a better diet for children, yet when the problems of subnutrition are investigated and discussed the importance of the diet is not always insisted upon to the same degree as the other factors of the environment.

This may be illustrated by the results of a recent investigation undertaken on behalf of the Medical Research Council[11] to ascertain the relationship of defective growth and health of children to poverty, diet, and other environmental factors. The main conclusion arrived at is that the chief factor determining growth and health is maternal efficiency, which, we might assume, would be correlated with good and bad feeding; yet the opinion expressed in the report was that the family diet does not explain discrepancies in nutrition and health between different groups of children. Furthermore, the statement is made in the report that a diet containing 10 to 12 per cent. of protein is well balanced with regard to this essential constituent—a statement which seems to me seriously to impair the value of the conclusions finally arrived at.

A 10 to 12 per cent. protein ration is the recognized adult allowance, though even for an adult this may be insufficient if the source of the protein is largely vegetable. It is also likely that the adult members of the family would consume relatively a greater amount of the available protein, especially of the animal type, leaving to the smaller members of the family an amount of protein far below their minimum requirements, together with that part of the household's food which has always been looked upon as safer and more suitable for small children—namely, the carbohydrate. Protein is indispensable and non-interchangeable. The problem of the adult and the child are entirely different, and all authorities agree that the younger the child the greater the amount and proportion of protein needed for maintenance, repair, and growth. Holt and Fales[12] say that the average adult requires approximately 0.45 gram of protein per lb. of weight, and suggest that it is reasonable to suppose that the child requires 0.45 to 0.68 gram per lb. of weight for maintenance alone, and insist that more is necessary for growth, and that for the child animal protein should be given in preference to vegetable. They quote Gillett, who collected information from the literature up to 1917 with reference to the intake of healthy children between 2 and 15 years, as stating the protein intake to be 1.5 to 1 gram per lb. They also quote Gephart and Camerer, who give the amounts as 1.8 to 1 gram per lb. for children and adolescents.

The observations of Holt and Fales upon a series of healthy children over 1 year indicate that approximately 15 per cent. of the total calories taken are protein calories, and that two-thirds of the protein is of animal origin. They also noted that the younger and more active child took the larger proportion. Crozer Griffith[13] states that 20 to 25 per cent. of diet should be protein and 50 per cent. of it should be of animal origin.

Corry Mann[14] has recently compared the effects of adding certain foods to the basic diet of groups of boys living under identical conditions; his results show that the daily addition of a pint of milk causes greater increase in height and weight than the addition of other foods—for example, casein, butter, etc. Although adding casein instead of a pint of milk meant giving some 300 less calories, yet it appears to be inferred that the greater gain in height and weight when milk was given must be due to other constituents than the protein. Leighton and Clark[15] have shown, however, that the gain in weight and height is much the same, whether whole or separated milk is given, and I suggest that this proves that it is the protein which is the important factor.

Hutchison[16] warns us against the danger of protein underfeeding. He writes that habitual underfeeding with protein is more injurious than underfeeding with fat and carbohydrate, and leads to what he aptly calls threadbare tissues. I am satisfied that the majority of these children do not receive anything like the amount of protein necessary for maintenance, repair, and growth. That protein is not the only deficiency is likely. There is a considerable amount of available evidence suggesting that lack of vitamin A is a factor in lowering resistance to infections (Green and Mellanby's[17] work in this connexion is important), and I would mention the work of McCarrison[18] in connexion with lack of vitamin B.

Treatment.

Prophylaxis should be our first consideration, and the future lies in that direction. The problem of the child's diet is bigger than medicine, but not until the medical profession clearly defines what that diet shall be and how it stands in relation to the child's health shall we get authority to realize that diet stands higher than education and psychology in the full development of the child's mental and physical health. It is useless to expect improvement in health by means of throat operations, artificial sunlight, commercial concentrated vitamins, and psychological clinics, while at the same time the child's tissue cell is seriously handicapped by persistent underfeeding of essential food constituents.

Immediate symptoms may be relieved by sugar, alkalis, laxatives, malt preparations, sedatives, and so forth; convalescent treatment and holidays from home are temporarily useful; attention to the throats of properly selected cases may produce immediate improvement; but all these together cannot remove from our midst the debilitated child while the diet remains persistently unsatisfactory.

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A CRITICAL STUDY OF UNDULANT FEVER.

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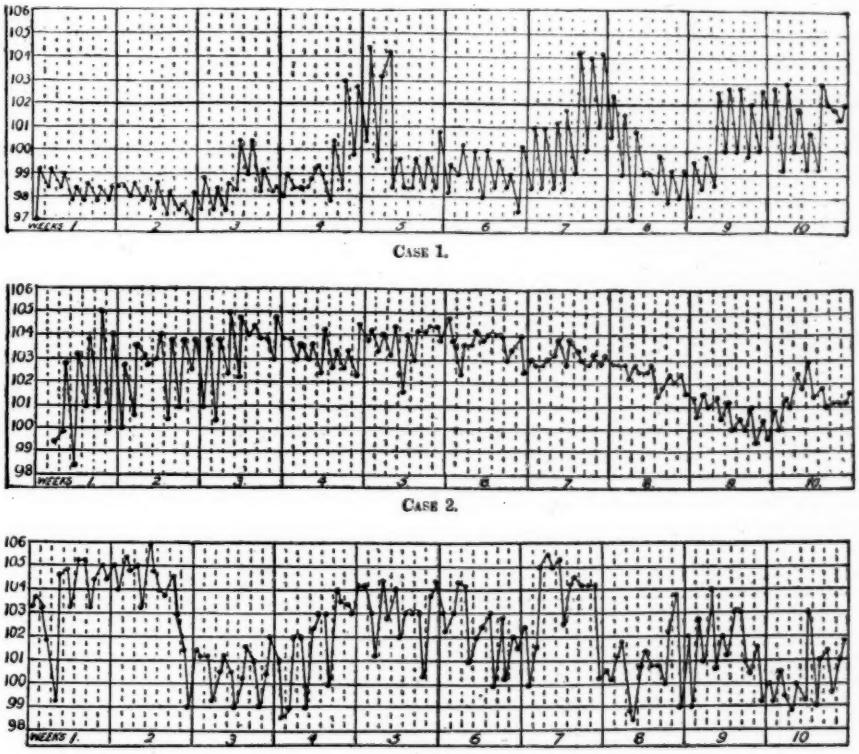
UNDULANT fever (formerly known as Malta fever) is becoming sufficiently rare in practice in England to excite comment whenever it occurs, while the close association, or identity, of *abortus* fever in man and cattle with the classical type of undulant fever is at present attracting universal attention. We therefore consider it an opportune moment to survey a series of cases which have occurred in the practice of this hospital during the last eight years. It shows clearly enough, from the localities from which the patients were derived, the almost universal distribution of undulant fever, for here we have for comparison a series of cases derived from India, East Africa, Peru, and from England itself. No cases, however, have come from the Mediterranean.

There are several points upon which we are at liberty to comment, as can be gathered from the accompanying tables.



CASE 1.

CASE 2.

CASE 5.

Charts in the first ten weeks of the fever in three cases, showing variations in type of temperature.

DIAGNOSIS.

First, as regards the initial diagnosis, it is noteworthy that the impressions recorded were those of typhoid in four cases, malaria in another, and influenza in the sixth. Added to this we might mention that the localization of pain to the margin of the gums and to the eyes in the initial stages of the fever first drew attention to possible defects in these organs. It is fair to state that in making these initial tentative diagnoses there was some justification of a diagnosis of typhoid or malaria in the previous history of the patient. Nevertheless, we can say that all the cases, surveyed as a whole, presented a definite diagnostic syndrome. In this category we include a high initial remittent pyrexia, and it is necessary to emphasize that this may be high (up to 105° F.), resembling in this respect that of true typhoid (see charts). Splenomegaly of a considerable degree was present in every case, and should be considered a prominent factor in making a diagnosis. The intradermal "melitene" reaction of Burnet was tried in three instances and proved to be successful. The skin reaction remained visible for forty-eight hours.

SYMPTOMS.

Arthritic pain was a constant and characteristic feature associated with periarticular effusions which are particularly transient, appearing first in one joint, and then, after a short interval, in a neighbouring one. In addition to the joint pains, the fasciae and bony prominences exposed to the greatest amount of pressure are also affected. We would emphasize that the headache of undulant fever, which is so persistent in the early stages of the infection, has a characteristic of its own. It is not so dull or stuporose as that of typhoid, but it causes intractable insomnia without any appearance of delirium or dulling of the mental faculties. Another characteristic which would assist the practitioner in the differential diagnosis from typhoid is the epistaxis which appears early in the typhoid group, but correspondingly late in the course of undulant fever. It is really part of a general tendency to haemorrhage, as instanced by the bleeding from the gums in three cases, for which the patients had all their teeth removed in the initial stages of the illness. Purpuric eruption resembling that of scurvy appeared in one, and in one particularly protracted case frequent haemorrhages from the urethra were recorded.

Rigors of a subacute character were frequently noted in three cases, with the exacerbation of the fever following upon a comparatively quiescent period. These signs may be taken as affording additional evidence in the differential diagnosis from typhoid, in which they are rare.

The tendency in the later stages of the disease for *Brucella melitensis* to spread by the lymphatic route (a method of spread which is found also in *Br. abortus* in cattle) is one to which hardly sufficient attention has been drawn. There occurs a specific adenitis in this disease (about the fourth month). The glands affected were the cervical group in three, the inguinal set in three, and in two the symptoms were referred to the intra-abdominal glands at the portal fissure, which, if unrecognized, might lead to the suspicion that the patient was suffering from some affection of the gall-bladder. That orchitis may supervene in undulant fever has long been recognized, and it is probably of the same nature as the adenitis already referred to. Testicular pain with some degree of enlargement of the organs themselves was observed in half the number of cases. Profuse and drenching sweats were noted in all. The sweating is universal and occurs mostly at night, necessitating the frequent changing of the bedclothes. A peculiar sour and penetrating odour characterized the sweats in two instances—the "tang" of the odour somewhat resembling that of typhoid to those who are able to appreciate it.

It is hardly necessary for us to comment upon the characters of the temperature charts which are reproduced herewith and which show the curious rhythmical variations. From the figures worked out from our charts the tendency

TABLE I.—*Clinical Symptoms.*

Symptoms.	Case 1.	Case 2.	Case 3.	Case 4.	Case 5.	Case 6.
Fever	+	+	+	+	+	+
Sweats	+	+	+	+	+	++
Arthritis	+	+	+	+	+	+
Spleen	+	+	+	+	+	+
Headache	+	++	+	+	++	+
Adenitis	+	+	−	−	+	−
Eye pains	+	+	+	+	−	+
Photophobia	+	+	−	+	−	−
Sore throat	+	−	−	−	+	−
Haemorrhage:						
1. Epistaxis	+	+	+	+	+	+
2. Gums	−	+	+	+	−	−
3. Urethral	−	+	−	−	−	−
4. Purpura	−	−	+	−	−	−
Testicular pain	−	−	+	+	−	+
Sudaminary odour... ...	+	−	+	−	−	−

is for the maximum* rise of temperature to take place between 6 and 10 p.m. The lowest temperatures on an average are recorded between 10 a.m. and 2 p.m.

SEQUELS.

Amongst the distressing sequels noted were sciatica of a most persistent character lasting for weeks, and once with pain localized to the sacro-iliac joints, possibly brought about by haemorrhage into the joint cavity. Muscular wasting and laxity of the ligaments of the knee and foot causes a considerable degree of disability during convalescence.

CLINICAL PATHOLOGY.

An analysis of the clinical pathology shows that the blood count throughout all the stages of undulant fever is generally normal. No rise in the number of leucocytes was noted in any instance. On the other hand, one case showed definite changes in the red blood corpuscles, and this was

TABLE II.—*Pathological.*

	Case 1.	Case 2.	Case 3.	Case 4.	Case 5.	Case 6.
R.B.C.	4,900,000	4,770,000	3,420,000	5,000,000	—	4,000,000
W.B.C.	8,110	7,200	4,400	6,900	6,000	8,600
Hb.	85%	85%	75%	90%	—	80%
Polymorphs ...	48%	—	50%	37%	—	42%
Lymphocytes...	44%	—	42%	50%	—	46%
Mononuclears	7%	—	8%	10%	—	12%
Eosinophils ...	1%	—	0%	3%	—	0%
Parasites ...	Nil	Nil	Nil	Nil	Nil	Nil
Anisocytosis ...	—	—	Anisocytosis	—	—	—
Poikilocytosis	—	—	Poikilocytosis	—	—	—
Blood culture	Positive once only	Positive once only	Positive on two occasions	Negative throughout	Positive once only	Negative throughout
Urine culture	Negative throughout	Negative throughout	Positive once only	Negative throughout	Negative throughout	Negative throughout
Agglutinates:						
Br. melitensis	1 in 640	1 in 80	1 in 1,280	1 in 640	1 in 600	1 in 500
B. typhosus	—	—	—	1 in 320	—	—
Br. abortus	—	—	—	1 in 480	—	—

due undoubtedly to persistent purpura (Case 3). *Br. melitensis* was isolated by blood culture in four instances, and

* *Maximum rises:* 2 a.m., 7 per cent.; 6 a.m., 14 per cent.; 10 a.m., 2 per cent.; 2 p.m., 6 per cent.; 6 p.m., 33 per cent.; 10 p.m., 38 per cent.

it is to be noted that the organism can be isolated from the blood stream at any period of the disease up to absolute convalescence, even when the patient's condition would not lead one to suspect a septicaemia, and it is probably true that the organism is not actually destroyed in the blood stream, but that the infection "burns itself out." It is to be noted, too, that in order to secure success in blood culture the inoculated medium must be incubated for at least ten days; the same applies to the cultivation from the urine. In one instance success was obtained from a mid-stream specimen which proved to be uncontaminated; on the other hand, no success was obtained with catheter specimens.

SEROLOGICAL TESTS.

The agglutination test with dead emulsions of *Br. melitensis* (Mediterranean strain) proved of diagnostic value in every case when performed by the macroscopic method. On each occasion the initial diagnosis was made by this test on Garrow's agglutinometer, which proved to be as reliable, and much more expeditious, than the tube method. We would emphasize that the titre of agglutination appears to have no bearing on the prognosis, nor does it indicate in any way the probability of isolation of the organism by blood culture. For instance, in the most severe case of our series (Case 2) the titre of agglutination to *Br. melitensis* never rose above 1 in 80.

TREATMENT.

On the question of treatment it is a matter of regret that we have nothing very positive to record. As regards the efficacy of vaccine we prefer to keep an open mind. As will

TABLE III.—*Treatment.*

	Vaccines—				Other Treatment.
	Stock.	Autogenous.	Med. Res. Council.*	Bacillus typhosus.	
	Million.	Million.	Million.	Million.	
Case 1 ...	980	310	1,300	—	Rectal argochrome 1.8 gm.; N. A. B. 0.3 gm.
Case 2 ...	—	1,275	—	—	—
Case 3 ...	100	900	—	—	N. A. B. 0.95 gm.
Case 4 ...	—	—	—	400	—
Case 5 ...	—	125	—	—	—
Case 6 ...	475	—	—	—	—

* Polyvalent (Douglas).

be seen by Table III, all varieties of vaccines were tried. The effect of stock vaccines made from standardized laboratory cultures of *Br. melitensis* in doses of from 60 to 300 million were compared with those of autogenous vaccines made from organisms isolated from blood culture and with a polyvalent vaccine issued by the Medical Research Council and composed of many strains. We could obtain no evidence that the use of vaccines given over a prolonged period of three months or more in any way modified the course of the disease.

TABLE IV.—*Miscellaneous.*

	Duration of Illness.	Infecting Agent.	Place of Infection.	Profession of Patient.
Case 1 ...	12 mths.	Traceable to goats carried on board	Indian waters	Ship's engineer
Case 2 ...	15 mths.+	Laboratory cultures of Case 3	London	Pathologist
Case 3 ...	9 mths.	Goat's milk and cream cheese	Lima, Peru	Engineer (civil)
Case 4 ...	5 mths.	? Cow's milk	Kent	Colonel (ret.) farmer
Case 5 ...	4 mths.	Goat's milk	Djbouti, Somaliland	Wife of a planter
Case 6 ...	5 mths.	Goat's milk	Djbouti	Planter

Argochrome, a silver methylene blue compound prepared by Merck's and recommended by Nocht, was tried in one case by rectal enema. Although the methylene blue was absorbed and appeared in the urine, it seemed to have no

beneficial effect at all. Intravenous injections of eusol in doses of 50 c.cm. (double strength in distilled water) was tried in one case, and appeared to have some influence in modifying the fever.

In conclusion we would like to acknowledge our indebtedness to Dr. J. T. Duncan of the London School of Hygiene and Tropical Medicine, and Messrs. F. W. Foster and W. J. Muggleton for their kind assistance with the laboratory work undertaken in connexion with the above series of cases.

AN IMPROVED DIFFRACTION METHOD FOR DIAGNOSING AND FOLLOWING THE COURSE OF PERNICIOUS AND OTHER ANAEMIAS.*

BY

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Principle of Method.

WHEN a beam of white light is sent through a blood smear it is broken up (diffracted) by the blood cells into the spectral colours. From the distribution of the colours the *mean diameter*, the *degree and quality of anisocytosis*, and the *degree of poikilocytosis* of the red cells can be determined. The application of the method is simpler than the description. No mathematics are required to read Figs. 3 to 11, where the half-circles illustrate the diffraction spectra exactly as they appear on the screen of the apparatus, two at a time, thus facilitating comparison and reading of results. "Diffraction method" and "diffraction micrometer" are suggested as suitable names.†

Need for Method.

The increasing incidence in many countries of Addison's (pernicious) anaemia,[4] together with Minot and Murphy's discovery of the liver treatment,[5] has led to the publication of numerous papers. A curious feature of this literature is the scantiness or absence of numerical data on the diameter of the red blood cells, although the correctness of Hurst's statement,[6] "the most characteristic features of the blood in Addison's anaemia are the anisocytosis and the increase in the average size of the red cells," is at the same time very generally admitted. Red cell measurements evidently are still universally regarded as "research," and not as "routine." This is due to the lack of a suitable method. Direct microscopic measurement,[7] and photographic methods,[8] are manifestly too laborious.

Advantages of Method.

In its present form the advantages of the method are:

1. The only material required is a properly made, unfixed, unstained blood smear. Such smears remain serviceable for years, thus allowing dispatch over long distances, and storage for future reference. Fixed and stained smears are less suitable.

2. The method expresses in tenths of microns the mean diameter of at least one million red cells.

3. The method expresses in tenths of microns the diameter of both the largest and the smallest cells which are present in the smear in considerable number. In other words, it gives the degree and quality of the anisocytosis present. The information thus gained is not sufficient to construct a frequency curve, but ample for practical purposes, as it indicates the essential features of the curve.

4. The method gives the degree of poikilocytosis present in the blood smear.

5. All these determinations together do not take more time than a haemoglobin estimation.

6. The cost of the apparatus is moderate.

7. The method allows the direct comparison of the essential characteristics, mentioned above, of any two blood smears. This is helpful in following the course of a disease. (See Figs. 9 to 11.)

As I am dealing with practical issues only, I shall not go into the controversy about the effect of drying upon the diameter of the cells, nor discuss the problem whether there is such a thing as "the exact diameter" of a red cell.

Theory of Method.

The thin end of a properly made blood smear can be regarded as a diffraction-grating, the cells being opaque and the plasma transparent. A beam of white light passing at right angles through such a smear is diffracted at the edges of the cells, and the resulting light waves, collected by a lens placed behind the blood smear, will produce a series of concentric circular spectra in the focal plane of the lens. The size of these spectra is a function of the diameter of the red cells of the smear, the white cells being too few to count.

For practical purposes only the innermost of the circular spectra need be considered, as being the brightest. The formula expressing the relationship between the various factors, the derivation of which can be found in textbooks on physics, is:

$$d = \frac{1.7\lambda\sqrt{f^2 + r^2}}{r}$$

in which (d) is the diameter of the red cells, (f) the focal distance of the lens used, (r) the radius of the coloured circle in the (innermost) spectrum, and (λ) the corresponding wave-length. The formula shows that the diameter of the cells can be calculated from the radius of any coloured circle, that the diameter of the coloured circles and the diameter of the cells vary inversely, and that a lens with a longer focal distance will produce larger spectra.

So far the matter has been treated as if the elements of the diffraction-grating (the red cells) were all of equal diameter. The diameters of the red cells of a healthy person, of course, follow the curve of normal variation. Therefore, assuming that the mean diameter in such a case is 7.3μ, there will be more cells of this diameter than of any other, but there will also be an ever-decreasing number of cells deviating more and more, in opposite directions, from this mean value. The spectrum produced by the cells measuring 7.3μ will naturally be the brightest, these cells being the most numerous. On this spectrum will be superimposed the weaker spectra belonging to the other, smaller and larger, cells. In Fig. 1 are drawn to scale, as calculated from the formula, the spectra thrown by cells measuring 7.3, 6.7, and 7.9μ. Intermediate cells will, of course, throw intermediate spectra. The drawing shows that all these superimposed spectra will practically not affect the position of the bright yellow circle produced by cells measuring 7.3μ. They will make the whole yellow circle broader, and the superimposed red and green will dilute the colour. This means that the brightest yellow circle will remain the expression of the mean diameter of the red cells, and that from that yellow circle the mean diameter can be calculated (wave-length 0.59μ).

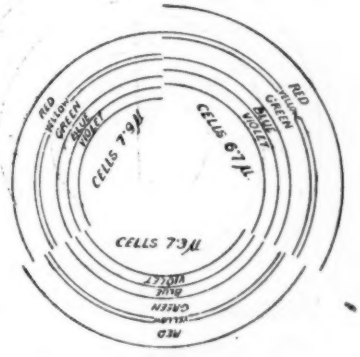

FIG. 1.

From Fig. 1 it is also obvious that the innermost violet circle always is the expression of the largest cells present in a blood smear in sufficient number to produce visible colours, and that similarly the outermost red circle represents the smallest cells which are present in the blood

* Part of the apparatus used in working out the diffraction method was bought by aid of a grant from the Union Government Research Grant Board.

† It has repeatedly been brought to my notice that Thomas Young (1773–1829) employed the identical *principle*, first for the measurement of wool fibres (wool=erion), and later of red blood cells. I cannot regard this as a reason to call my *apparatus* an eriometer, as Emmons[1] has suggested. When, in 1918, I discovered that bacterial colonies can produce diffraction spectra, I started using this phenomenon for measuring bacteria.[2] From this beginning I developed my diffraction method of measuring red cells[3] in complete ignorance of Thomas Young's work.

smear in similar number. By determining the points where the violet and red colours vanish, and substituting these radii and the corresponding wave-lengths (for red 0.70μ, and for violet 0.40μ) in the formula, both the diameter of the "smallest" and the "largest" cells present in the blood smear *in considerable number* can be calculated.

The method misses the very largest and the very smallest cells, because they are too few to produce a visible effect. For the same reason direct microscopic measurement does not achieve much more in this respect.

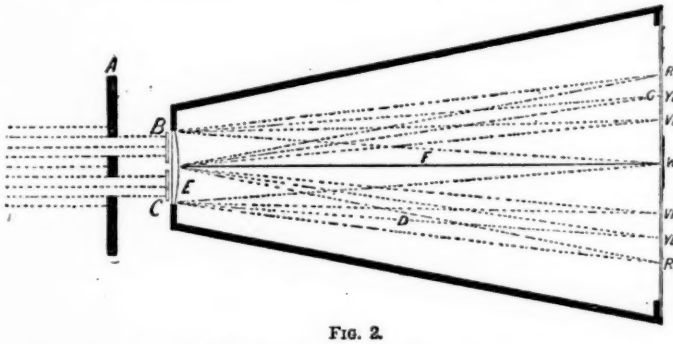

FIG. 2.

The advantages of direct microscopic measurement lie in the construction of a frequency curve. The important features of such a curve are the position of the top and the shape of the curve (narrow or wide, symmetrical or not). From the above it is evident that, generally speaking, the width of the spectrum corresponds to the width of the curve, that the position of the top of the curve is given by the position of the yellow circle, and that the relative positions of the extreme red and innermost violet circle with regard to the yellow circle serve to show whether the curve is symmetrical or not. Healthy people by this method usually show a symmetrical anisocytosis—such as mean diameter 7.3μ, "largest" cells 7.9μ, "smallest" cells 6.7μ.

For estimating the degree of poikilocytosis it must be remembered that the rounder the cells are the better the grating will be. Poikilocytosis thus affects the brilliancy of

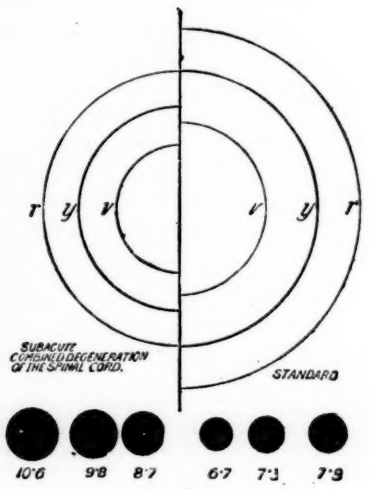

FIG. 3.

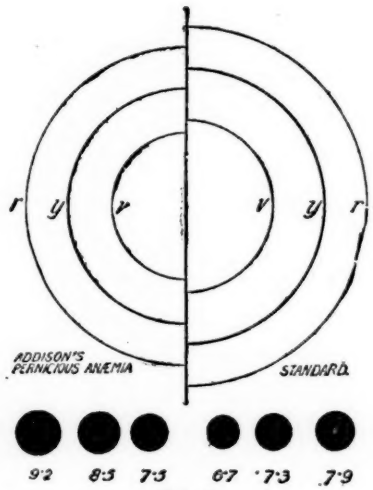

FIG. 4.

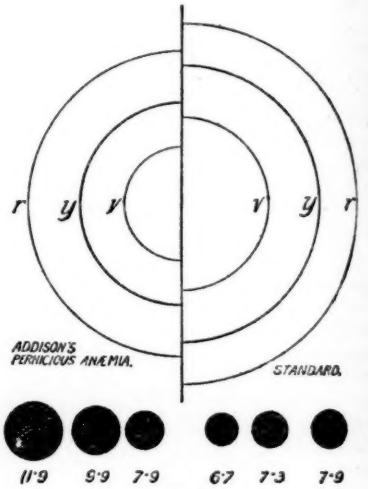

FIG. 5.

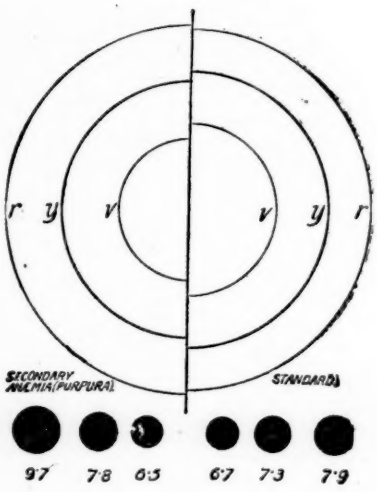

FIG. 6.

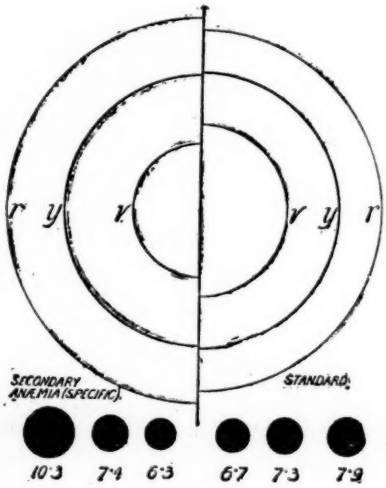

FIG. 7.

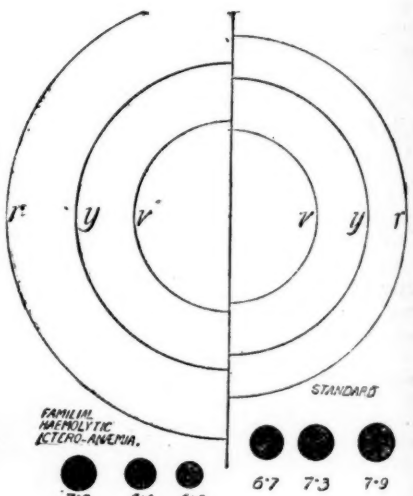

FIG. 8.

FIG. 3.—Typical small spectrum of subacute combined degeneration of spinal cord. Spectrum not proportionally narrower, indicating more anisocytosis than normal, and towards small side (10.6, 9·8, and 8.7μ). No poikilocytosis. Haemoglobin 70 per cent., red cells 3.5 million.

FIG. 4.—Typical small spectrum of an early case of Addison's pernicious anaemia. Little anisocytosis, asymmetrical, towards small side. Some poikilocytosis. Haemoglobin 34 per cent., red cells 2.7 million.

FIG. 5.—Late case of Addison's pernicious anaemia. Small spectrum, very marked anisocytosis, symmetrical. Marked poikilocytosis. Haemoglobin 20 per cent., red cells 3.6 million.

FIGS. 6 AND 7.—Typical broad spectra of secondary anaemia. The heavier the anaemia, the broader the spectrum. Late syphilis often gives a spectrum like Fig. 7. Anisocytosis very marked, asymmetrical, towards large side. Often in such cases poikilocytosis not marked, and mean diameter not much changed.

FIG. 8.—Strikingly large spectrum, diameters of cells very small, as typical for familial haemolytic ictero-anaemia, although cell volume may be large.[9] Little anisocytosis, symmetrical. Poikilocytosis present. Hereditary element traced in abnormally small cells in relatives on father's side, in father, and in brothers and sisters; mother's cells normal. Similar investigation seems indicated in relatives of patients of Addison's pernicious anaemia, to throw light on question of heredity.[10]

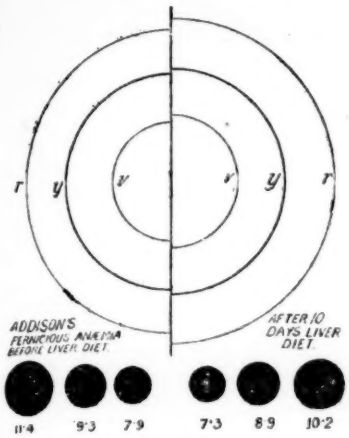

FIG. 9.

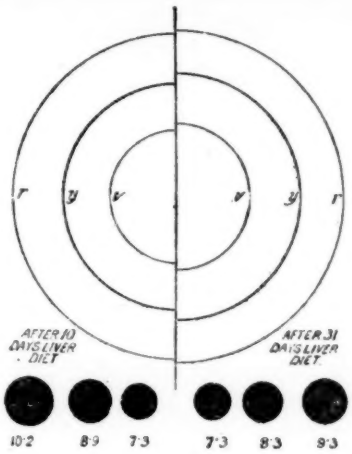

FIG. 10.

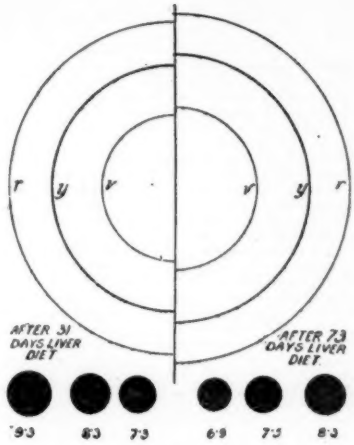

FIG. 11.

FIGS. 9 TO 11.—These three figures illustrate the improvement brought about through liver diet in a patient with Addison's pernicious anaemia. Spectra not compared with standard, but with other smears from the same patient. The haemoglobin rose from 32 to 80 per cent., and the red cells from 1.4 to 5.2 million during the same period.

the colours, and also the number of concentric spectra which become visible round the bright first one. From this the poikilocytosis can readily be estimated, especially as the method permits a direct comparison with a "standard" (Figs. 3 to 11). I need not detail why the method is not absolutely correct. Fair comparison with other methods shows that its advantages outweigh its inexactitudes.

Technique of Method.

A beam, about 6 cm. broad, of parallel light rays, from the sun, or from an artificial source (arc or pointolite) with condenser, is directed towards the apparatus (Fig. 2). Through two square holes, of 1.5 cm., in the screen "A" it reaches the thin ends of blood smears on the microscope slides "B" and "C," which are fixed to the front of the box "D" by clamps. The box is of wood or metal, 25 cm. high and 40 cm. long; the back is a ground glass plate "G," of 25 by 25 cm., with its ground surface towards the light. In front, in the centre, is the lens "E," a simple lens, of 6 cm. diameter and 40 cm. focal length, plano-convex, such as may be bought from an optician for a few shillings. The partition "F" is exactly in the middle, in close apposition to the lens and the ground glass.

It is preferable to have the apparatus in a dark room, and admit the beam through a hole in the wall; if this is not possible other means must be found to exclude all foreign light from the ground glass. It is a help if a disc of black cardboard is pasted over the centre of the ground glass, as the white light which is concentrated there is dazzling, and the centre of the disc can at the same time serve as a starting point for the measurement of radii.

As the partition "F" cuts off one-half of either set of spectra, the ground glass will show two sets of coloured half-circles in spectral colours, separated by a thin black line, the shadow of the partition. Their actual appearance is illustrated by Figs. 3 to 11. The three half-circles in each case represent the position of the extreme red, the bright yellow, and the innermost violet circle of the innermost spectrum, as indicated by the letters "*r*," "*y*," and "*v*."

A "standard" blood smear is obtained by collecting blood smears from "healthy" persons, comparing their diffraction spectra by using them in the apparatus two by two, and picking out one which gives medium values for the radius of the yellow circle, and minimum value for anisocytosis (=broadness of spectrum). It will be found that minor differences in these respects occur between individuals. These differences remain constant for long periods, and perhaps for ever, but intercurrent diseases may at least temporarily affect them. The meaning of these differences, their bearing on blood groups, their pathological significance, and other points in this connexion (day and night changes, effects of exertion), I shall treat in a later paper.

For the chosen standard smear the radii of the yellow, innermost violet, and extreme red circles are then carefully once and for all determined with a pair of compasses. With my lens, which has a focal distance of 40.4 cm., they measure respectively 56, 35, and 73 mm. From these values the formula gives for the mean diameter 7.3μ, for the largest cells 7.9μ, and for the smallest cells 6.7μ.

In determining the radius of the extreme red circle, it must be borne in mind that, as the second spectrum overlaps the first (or innermost) spectrum to a certain extent, the extreme red circle borders on the green circle of the second spectrum. Together these two colours produce a greyish zone, and the extreme red must be localized there where this grey zone ends, and the green appears quite pure. In localizing the innermost violet one must choose the spot where purple fades into yellow.

The standard radii being known, the radii belonging to any blood smear can easily be estimated by direct comparison, as shown by Figs. 3 to 8. Where the differences are small, the direct comparison makes them appear quite obvious, and for large differences an error of a millimetre in estimating the difference is not important. For accurate work compasses are useful. The values obtained for the radii can be converted into cell-diameters by calculation with the formula, but, of course, it saves time if from the formula a table or a curve is prepared from which the cell-diameters belonging to any radius can just be read off.

It is not always necessary to perform measurements and calculations, as often a glance at the spectra gives sufficient information (see Figs. 3 to 8) to make or exclude a particular diagnosis.

Application of Method.

The method has now been used by me on hundreds of smears, and its diagnostic results have been checked by other methods and observations. It has cleared up many difficult cases. In suspected cases of pernicious anaemia where it gave a typical secondary anaemia spectrum further examination of the patient has revealed early malignancy or duodenal ulcer. It has become an essential routine method, and as such has occasionally given a dramatic diagnosis in unsuspected cases of Addison's pernicious anaemia, aplastic anaemia, subacute combined degeneration of the spinal cord, and familial haemolytic ictero-anaemia, which otherwise might easily have escaped notice.

Note.—Figs. 3 to 8 show the differences between the standard and certain typical pathological spectra observed by me. At the bottom of Figs. 3 to 11 the small filled-in black circles represent, drawn to scale, the cells of mean diameter, the "largest"

and the "smallest" cells, as calculated from the radii of the half-circles shown. The diameters of these cells are given in microns.

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LIVER TREATMENT OF PERNICIOUS ANAEMIA:

ITS EFFECT ON THE POLYNUCLEAR LEUCOCYTE COUNT OF COOKE.

BY

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IN the course of routine blood examinations of the patients of this hospital, consisting of the polynuclear count of Cooke and the Schilling haemogram, it occurred to me to investigate the influence of liver treatment on the polynuclear count in a case of pernicious anaemia which was to undergo that treatment.

The polynuclear count of Cooke is simply a modification of the original Arneth count. The original Arneth count was far too complicated, and as a direct result of this we have two modifications in clinical use at the present day: the polynuclear count described by Cooke and Ponder[1] in 1927, which most closely resembles the Arneth count, and the Schilling haemogram,[2] which divides the neutrophil leucocytes into those with one lobe to the nucleus, including in this the myelocyte and the metamyelocyte, and those cells with more than one division to the nucleus. In this study we are only concerned with the polynuclear count. This gives a much more delicate picture of the leucocytes than either the Schilling haemogram or a total white count *plus* an ordinary differential one.[3] The Schilling haemogram does not indicate any abnormality in pernicious anaemia apart from an inconstant lymphocytosis.

In the polynuclear count as described by Cooke and Ponder[1] the percentage of leucocytes with one lobe to the nucleus is multipled by one, the percentage with two lobes by two, and so on up to the percentage with five or more, which is multiplied by five. The numbers obtained added together and divided by 100 give the weighted mean number of lobes of the nucleus per leucocyte. The average number in each group in health is about—

I.	II.	III.	IV.	V.
10	25	47	16	2

This gives a normal weighted mean of 2.75. The average varies slightly from individual to individual and with individual workers. Arneth's mean is normally given as 2.76, and Cooke in 1925[4] gave his normal as 2.70. My own mean, taken from members of the staff who are healthy, is 2.65. The normal mean can fairly definitely be taken as lying between 2.50 and 2.80. The first two groups of the count (I and II) are spoken of as the left-handed columns, and groups III, IV, and V as the right-handed columns. The numbers in the two groups I and II added together constitute the left hand, and III, IV, and V the right hand. I have divided the right hand by the left hand and called this the index of right-handedness (R.H.) in tables. Bushnell and Treuholtz[5] suggested adding together groups I and II and half of group III. This is referred to in the tables as B.T.

Naegeli[6] described a pronounced hypersegmentation of the neutrophil nucleus in pernicious anaemia. Arneth[7] in 1920 described the "Rechtsverschiebung" or shift to the right which accompanies the neutropenia characteristic of pernicious anaemia. Cooke[4] in 1925 showed that in uncomplicated pernicious anaemia there was an increase in the number of cells in groups IV and V and a decrease in groups I and II. In group V are those cells with five or more lobes to the nucleus; in pernicious anaemia we often find cells with seven or eight lobes, and in the case of the macropolycyte[8] there may be ten to fourteen lobes. This means, of course, that the weighted mean and the index of right-handedness are both high. Jedlička and Béranek[9] report the neutrophil picture in 35 cases of pernicious anaemia. There is nearly always leucopenia, although there are cases with neutrophil leucocytosis of long duration. These authors found an increase of the number of cells with more than three lobes to the nucleus, but also a shift to the left—that is, a dissociation of the blood picture. They consider this dissociation of the blood picture to the right as well as to the left a characteristic of pernicious anaemia. However, Arneth[10] has subsequently demonstrated that this dissociation to the right and to the left also occurs in lymphatic leukaemia. Jedlička and Béranek point out that this dissociation is most marked at the height of the disease and may disappear during remission. Arneth had previously suggested that the myelocytes observed by some authors are really erythroblasts, so accounting for a certain number of cells in group I. Krjukoff[11] describes a similar dissociation in sprue—the appearance of myelocytes together with an increase in the number of hypersegmented forms. This will be referred to later. Whitby[12] describes how in two out of four cases treated with liver the relative lymphocytosis disappeared and the differential count became normal apart from the eosinophilia. He did not describe any changes in the neutrophils. Other writers in the *Lancet* inquiry into the effects of liver treatment[13] show usually a return to the normal number of leucocytes, but give no detail of the neutrophil picture.

Cooke gives the following numbers of cells per group in his cases of pernicious anaemia. The respective indices are given in the last three columns.

Case.	Group.					Weighted Mean.	B.T.	R.H.
	I.	II.	III.	IV.	V.			
1	11	24	49	15	1	2.71	59.5	1.85
2	6	20	39	22	11	3.08	45.5	2.85
3	6	27	40	22	5	2.93	47.0	2.03
4	7	20	44	24	5	3.00	49.0	2.70
5	7	16	29	39	9	3.27	37.5	3.35
6	12	31	26	20	8	2.78	59.0	1.17
7	20	31	17	16	16	2.77	59.5	0.96
8	16	22	32	16	14	2.90	54.0	1.63
9	10	15	38	24	13	3.05	45.0	3.00
10	6	20	42	20	12	3.12	47.0	2.85

Of these, Cases 7 and 8 both show a dissociation of the count and Case 6 to a lesser degree. Our case before liver treatment showed—

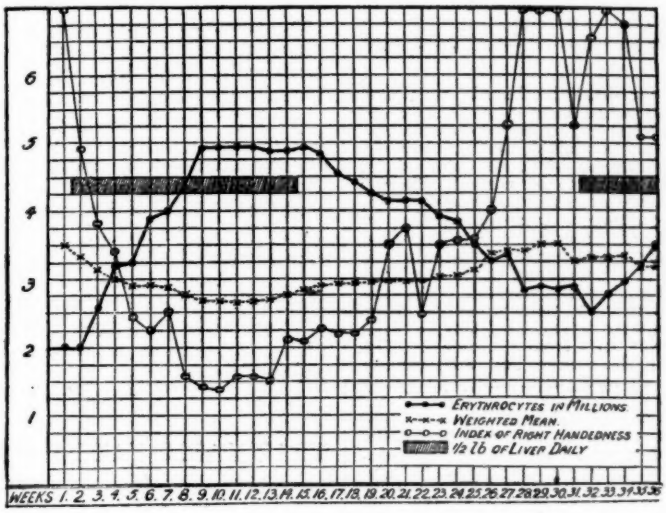
Group I	1
,, II	16
,, III	39
,, IV	32
,, V	11
Weighted mean	3.33
B.T.	36.5
R.H.	4.58

Possibly Cases 1, 6, and 7 of Cooke's series had some intercurrent infection or hidden septic focus causing the low weighted mean.

It occurred to me that possibly liver treatment might bring the large number of cells in groups IV and V down to a normal level as the blood returned to normal, and this is precisely what happened. As the red count rose so the weighted mean and right-handed index fell until they reached what was apparently the normal level for the particular individual, and there they remained constant so long as the liver treatment was continued and for some little time afterwards. The two indices then began to rise again as the number of erythrocytes fell, but not quite so rapidly as had happened at the beginning of the liver treatment. When the second course of liver treatment was begun the two indices fell as the erythrocyte count rose. The accompanying chart gives a clear picture of the result. The index of right-handedness shows much more than the weighted mean the change in the polynuclear count, but is obviously too sensitive to change when the numbers in groups I and II are small.

COMMENT.

In the usual clinical descriptions of pernicious anaemia so much interest is concentrated on the red cells, their haemolysis, size, shape, etc., that the leucocytes have come in for very little attention. It seems, however, that the leucocyte changes may in the end produce more convincing indication towards the elucidation of the etiology of the syndrome than has in the past been thought of. A shift to the right of the Arneth or polynuclear count is not common. It is never found in conditions in which there is any infective process at work. The onset of an infective process swings the count across to the left at once, where it stays until the infection subsides. According to Cooke[1] the shift to the left is not so pronounced as it would be in the case uncomplicated by pernicious anaemia. The conditions in which a shift to the right have been described are pernicious anaemia, sprue, and, according to Arneth,[10] lymphatic leukaemia. Dr. Newham of the London School of Tropical Medicine was kind enough to send me some blood films from two well-established cases of sprue. Both these showed a well-marked shift to the right, with the typical blood picture one has learned to associate with pernicious anaemia. Whether *Bothriocephalus latus* anaemia shows a shift to the left or not I am unable to say.


6
5
4
3
2
1
ERYTHROCYTES IN MILLIONS
WEIGHTED MEAN.
INDEX OF RIGHT HANDEDNESS
½ lb OF LIVER DAILY
WEEKS 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36.

A recent article by Carbonara[11] is extremely interesting, for he found a shift to the right of the Arneth count associated with liver disease. In view of the effect of liver treatment in pernicious anaemia, this work of Carbonara's requires careful investigation and confirmation. If confirmed it certainly would appear to be a link in the chain of evidence. Sprue is looked on by Ashford[15] as a glandular insufficiency on which is superimposed a gastro-intestinal infection with *Monilia psilosis*. However, the more recent work of Lye, Zerfas, and Cornwell[16] has shown that the number of isolations of monilia from stools and gastric contents is no greater in pernicious anaemia than it is in other cases of severe anaemia and gastric achylia. These authors conclude that monilia is unimportant as an etiological factor in either pernicious anaemia or sprue. Elders[17] states that sprue is a deficiency disease, and, after comparing sprue and pernicious anaemia, concludes with the statement that "pernicious anaemia is, like sprue, a deficiency disease, and as such should be curable, or at least amenable to improvement, by well-chosen food." This statement was made at the end of 1924, and how true his words were is seen from the subsequent work of Whipple and the introduction of the Minot-Murphy diet. On the other hand, Newham, Morris, and Manson-Bahr[18] conclude that pernicious anaemia and sprue are two distinct clinical entities, although having several features in common.

Knott[19] found that after liver treatment in pernicious anaemia there was no diminution in the intensity or the nature of the intestinal infection, that the disappearance of the indirect van den Bergh reaction did not necessarily correspond with a reduction in the intestinal infection, and that cases in which a return to a normal blood picture had occurred might still show just as high a bacterial content of the faeces as when in the acutely anaemic stage. In the face of this conflicting evidence, which tends against the infectious etiology of pernicious anaemia, we are driven back on to the theory propounded by Piney[20] that pernicious anaemia can only occur in persons who have a remnant of megaloblastic tissue in the liver—that is, that it is essentially a constitutional disease. This is supported by the frequent familial incidence, and also by the fact that achlorhydria, which is invariably present in pernicious anaemia, also commonly occurs in several members of one family. Naegeli[21] thinks that there is possibly some constitutional weakness or abnormality of the bone marrow, due perhaps to the retention of megaloblasts since childhood. He quotes Schaumann as having observed cases of *Bothriocephalus latus* anaemia which recovered, but some of which later suffered from real cryptogenetic pernicious anaemia. This supports the constitutional origin of the syndrome. Haden[22] looks on pernicious anaemia as due primarily to an inability of the bone marrow to mature red cells, resulting from the lack of some specific substance, and thus would classify it as a deficiency disease, the deficiency not necessarily being hepatic. He concludes by saying: "It is more likely due to a failure of absorption, or an elaboration in the intestinal tract of the specific maturating substance, perhaps resulting from a long-existent achlorhydria."

CONCLUSIONS.

1. A case of pernicious anaemia treated with liver showed an abolition of the marked shift to the right of the polynuclear count as the total blood picture returned to normal. When liver treatment ceased the polynuclear count moved over to the right again, to be brought back by more liver treatment.

2. A plea is made for a closer study of the leucocytes by those clinicians who have large numbers of cases of pernicious anaemia to deal with, in the hope that this study may lead to a better understanding of the syndrome than the study of the erythrocytes has done.

3. At the same time it would be of greater scientific interest if *all* reports of cases of pernicious anaemia contained an account of, in addition to what is called the "typical blood picture" and the achlorhydria, (*a*) the leucocyte picture, including the polynuclear count or the Arneth count, in addition to Schilling's haemogram; (*b*) the icterus index; (*c*) the indirect van den Bergh reaction; (*d*) the Price-Jones curve. The diagnosis of pernicious anaemia is made much more accurate in the presence of (*a*) to (*d*).

My thanks are due to Dr. P. W. Bedford for permission to make use of the clinical material and to Dr. Newham for the blood films from cases of sprue.

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JEJUNAL ULCER ASSOCIATED WITH TESTICULAR PAIN.

BY

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THE following case appears to be worth recording on account of the unusual symptoms.

A man, aged 37, had mumps as a child, but otherwise no illness worthy of note till December, 1915, when he was invalided from the army with dysentery. Shortly after returning to duty he was buried by a shell. He was apparently concussed, and immediately afterwards the thyroid gland was seen to be much enlarged; it gradually became smaller, and now seems to be normal. Shortly after the concussion he began to have attacks of epigastric pain, associated with hunger, about half an hour after meals, and tenderness in the epigastrium to the right of the mid-line. At this time he was having irregular meals and smoked heavily; the pain was relieved by food for about half an hour, and then returned increased, being frequently associated with vomiting. At the beginning the attacks lasted about a week, pain appearing after every meal during this time; there were intervals of two or three months during which he was entirely free from symptoms. The attacks were specially severe during the winter, and were usually accompanied by enlargement of the thyroid gland. They gradually became more frequent and of longer duration.

In July, 1919, he had an attack of unusual severity, and three weeks later, while working in his office, he experienced sudden acute abdominal pain associated with repeated vomiting. An operation was performed for perforated duodenal ulcer, but he was apparently given no instructions as to diet, and he ate what he pleased. He remained well for about two years, after which the symptoms appeared again more acutely, and the pain and tenderness extended across the epigastrium. The stools now showed the presence of occult blood. He was treated for six weeks by dieting, but was not confined to bed. After a short interval the symptoms returned, and in February, 1925, gastro-jejunostomy was performed; following this, he was put on a moderately restricted diet for two months.

Six months later he again had symptoms, but they were not so acute as before the operation; they came on particularly when the weather was cold. The pain became gradually longer in duration, increasing in intensity during the day, independent of meals, and was not now relieved by food. On the other hand, for the first time he started to be wakened by pain between 2 and 3 a.m. This only occurred if he had taken a meal after 7 p.m.

In August, 1926, he first felt a dull aching pain in the testes at the end of the day, when the epigastric pain was most acute. A suspensory bandage gave little, if any, relief. Gradually the pain in the testes became greater, and appeared earlier in the day, together with pain in the loins. He never had these symptoms except when the epigastric pain was present, and there was no abnormality in micturition.

In May, 1928, he was awakened about 3 a.m. by attacks of pain in the testes, so severe as to necessitate injections of morphine. There was general tenderness in the upper abdomen, especially at a point immediately above and to the left of the umbilicus, where a small lump could be felt. It seemed to be fixed to the deeper tissues, and moved with the pulsations of the aorta. Pressure on the lump reproduced the pain in the back and in the testes. The testes themselves were tender, and there was slight hyperalgesia in the loins. The urine was normal, and examination of the urogenital tract revealed no abnormality. An *x*-ray examination with a barium meal showed a jejunal ulcer in the situation of the tumour. Occult blood was present in the stools. The patient was confined to bed, and treated medically on a strict diet. The pain was rapidly relieved and the tumour gradually disappeared. Since then he has remained on a modified diet, and has become a non-smoker. He has remained free from symptoms, has put on 2 st. in weight, and remarks that he has never felt better in his life.

The two main points of interest in this case are: the association of thyroid enlargement with attacks of epigastric discomfort due to duodenal ulcer, and the pain in the testes and the loins. With regard to this pain, four points may be emphasized. (1) Testicular pain was never present except when there was pain in the epigastrium. (2) Pressure on the tumour produced pain in the testes. (3) Subsidence of the pain, both in the testes and in the epigastrium, coincided with the disappearance of the tumour. (4) The tumour moved with the pulsations of the aorta, to which it appeared to be fixed. The first three of these points suggest that both testicular and epigastric pain had a common origin.

X-ray examination showed that the jejunal ulcer and the tumour were situated just to the left of the mid-line, at the level of the intervertebral disc between the third and fourth lumbar vertebrae. The sympathetic nerve supply, both of the kidneys and the testes, is derived from the twelfth thoracic and first lumbar segments of the cord. These nerves form a plexus in front of the aorta, and branches from this plexus accompany the renal arteries to the kidneys. Branches from the same plexus accompany the spermatic vessels to the testes, and are also distributed to the ureters. Thus the inflammatory mass associated with the ulcer was situated where the sympathetic plexus, in front of the aorta, would be involved, and the patient's symptoms suggest that pain can be referred to a viscus through sympathetic nerves. The phenomenon also suggests an explanation for the testicular pain in ureteric colic, other than the one advanced by Mackenzie, that both these structures are supplied by branches of the genito-crural nerve.

Periodic stimulation of the sympathetic plexus by the inflammatory mass might be due to periodic vascular engorgement or to actual traction on the plexus. The latter seems the more likely explanation. The traction could be produced by gastric movement, the site of the ulcer being fixed. If this explanation is correct, the coincidence of the epigastric pain with that in the testes suggests that pain due to an ulcer is associated with movement of the diseased viscus, whether the movement be tonic or peristaltic in origin. The persistent character of the pain suggests an alteration in tone as the more likely explanation.

TRAUMATIC FAT NECROSIS OF THE BREAST.

BY

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THE condition of traumatic fat necrosis of the breast was first described in America in 1920 by Lee and Adair,[1] who published two cases. They wrote further on the subject in 1922[2] and in 1924,[3] and since then several cases have been described. The first published in this country was by Keynes.[4] Later, Hadfield[5] wrote on the subject.

In these cases, following trauma, there developed in the breast a lump which clinically appeared to be a carcinoma, but on microscopic examination areas of fat necrosis only were found, and no evidence of malignant disease was present. Farr[6] was able to produce experimentally the characteristic lesions by pinching with forceps the subcutaneous fat of young pigs. Sections of the injured areas showed the typical histological picture of fat necrosis. Farr concluded that in an area of traumatized fat the lipolytic enzyme present in fat and blood is liberated, and acts on the neutral fat, breaking it down into its component parts—fatty acid and glycerol. These substances form the irritant which gives rise to the foreign body reaction producing the lesions of traumatic fat necrosis. Although trauma seems to be the usual factor in the published cases, Gottesman and Zemansky[7] came across a case in which this cause could be eliminated. Further, they analysed 78 cases of non-malignant breasts, and in 14 found some stage or degree of fat necrosis. They concluded that factors other than trauma may explain the phenomenon, and that the escape of fatty material from a dilated duct and its subsequent decomposition plays a role in the cause of this condition.

Professor M. J. Stewart calls the condition subacute panniculitis. He tells me that in his experience it is not uncommon, and he has met with it in the omentum,

in fat removed from the femoral canal, and in the subcutaneous fat in different situations in the body as well as in the breast. In a paper on xanthema and xanthosis[6] he writes:

"When adipose tissue is involved in a subacute inflammatory process it is not uncommon for aggregations of large, foamy endothelial cells to make their appearance in the interstices of the tissue between the oil droplets. Like foamy cells elsewhere, they are filled with cholesterin fat, and often they may be seen going on to the formation of foamy giant cells. Rarely pure cholesterin crystallizes out, and a remarkable histological picture results, in which foamy cells, giant cells, cholesterin clefts, and foci of necrosis are mixed up together. Similar changes may be met with in the quieter forms of fat necrosis."

That this condition is not so uncommon as supposed is also evidenced by a table published by Lee and Adair[2] in the article already referred to. During the period in which their five cases of fat necrosis occurred they found that, compared with primary breast cancer, the incidence was 1.8 per cent., with operable cases of breast cancer 4.2 per cent., and compared with benign lesions the incidence was 7 per cent.

The following case recently came under my care:

Clinical History of Case.

Mrs. E. A., aged 53, no children. Rather an obese subject. She knocked her right breast two months previously to noticing a lump therein. On examination, there was a nodule about 1½ by 1½ in. in the upper and outer quadrant of her right breast; it was hard and fairly well defined, and could be easily felt with the flat of the hand. The centre of the nodule was attached to the skin, but there was no deep fixity, nor could any enlarged glands be felt in the axilla. The nipple was not retracted, nor was the breast elevated. The diagnosis of early carcinoma of the breast was made, and with this diagnosis two of my colleagues agreed. A radical removal of the breast was carried out. The convalescence was straightforward, and the patient was discharged three weeks later with a soundly healed wound.

Microscopic Examination.

The breast lesion is a subacute inflammatory and necrotic one, without evidence of neoplastic change, and involving the adipose rather than the glandular tissue.

1. In the central portion of the affected area there are several small necrotic patches of irregular outline, as yet free from calcification.

2. Active fibroblastic proliferation is the chief feature of the central area. Intermingled therewith are fat-droplet spaces derived from the original adipose tissue, many of them being of large size from fusion of the contents of disintegrating fat cells. Scattered endothelial cells, lymphocytes, and "foamy" cells (fat- and lipoid-filled phagocytes) are present in small numbers.

3. In the outer zone of the lesion the most notable feature is the accumulation of the same foamy macrophages in large numbers throughout the adipose tissue. They occur in irregular groups and strands, separating the adipose tissue cells from one another, and are associated with slight degrees of fibrosis. The examination of frozen sections shows that they contain both neutral and cholesterol fat, taken up by them from disintegrating fat cells, many of which have their oil vacuoles filled by the products of cell degradation.

4. A few giant cells with "foamy" cytoplasm and up to six or eight nuclei are present here and there throughout the lesion.

5. The scanty gland acini present appear to be involved secondarily in the inflammatory process.

The appearances correspond to those which have been described in America under "traumatic fat necrosis." The lesion differs from the fat necrosis of pancreatitis in being of slow evolution, so that phagocytosis of fat-cell disintegration products and fibroblastic proliferation keep pace with cell destruction. The axillary glands show no pathological changes. The condition is met with in many different sites, but in the breast it is of special importance because of the danger of confounding it with scirrhous carcinoma.

The importance of traumatic fat necrosis from a clinical viewpoint lies in its simulation of carcinoma of the breast; in many of the published cases a radical operation has been carried out, and only later, on microscopic examination, has the true diagnosis been made. The recognition of the condition is therefore important and should be borne in mind, especially in what appears to be an early case of mammary cancer. In arriving at a diagnosis the traumatic nature of the lesion should be remembered, as injury seems to have been the starting point in most of the published cases. It is interesting to note that in three of the five cases of Lee and Adair[2] the disease developed after the giving of saline infusions into the breast. Although patients with carcinoma of the breast frequently state that they have had a knock or blow on the breast, or think the corset may have rubbed them, the exact nature and date of the injury is usually rather indefinite. In cases of fat necrosis, however, the exact trauma is clearly remembered.

The time interval between the injury and the development of the tumour varies from a week or two up to several years. The condition is usually met with during the fourth and fifth decade, and mostly in women with large and fat breasts. The tumour itself, although hard like a cancer, is better defined. The superficial fixity of the tumour to the skin exactly resembles that found in cancer, but deep fixity is not as a rule present. The axillary glands are not enlarged, though this does not help in the differential diagnosis from an early cancer. In a suspected case it will often be necessary to perform a local excision of the tumour for microscopic examination, since the mimicry of early mammary cancer is so close. If the condition is borne in mind, however, and only the lump removed, adequate treatment will have been carried out and an extensive operation obviated.

I am indebted to Professor M. J. Stewart for his advice in the preparation of this article, and for the report on the microscopic examination of the specimen in the case quoted.

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SEVERE HAEMORRHAGE FROM THE RUPTURE OF A CORPUS LUTEUM CYST.

BY

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HAEMORRHAGE into the peritoneal cavity from a ruptured ovarian cyst is met with occasionally. Haemorrhage from a ruptured luteal cyst in a young woman, simulating an ectopic pregnancy, is a rare condition. Edward Moore[1] reviewed the literature in 1922 and could find only fourteen cases recorded, a list of which is given in his paper. Since that time records of several patients suffering from this condition have been published, notably in Germany by Kaboth,[2] Hesselberg,[3] Eick,[4] Schickele,[5] and others. But in the English[6] and American literature little mention has been made of this condition. It has been my good fortune to have been associated with three cases, descriptions of which are given below. As a ruptured ectopic pregnancy is closely simulated, a pre-operative diagnosis is difficult, and in this series the condition was not diagnosed before operation, and afterwards only when portions of the tissue removed had been sectioned and examined microscopically. By careful attention to the history, however, it should be possible to make a diagnosis. The most important points in the history are as follows.

The patient is a young woman, usually single; the average age in the following cases was 24. There is a history of a sudden attack of severe abdominal pain localized to the lower abdomen on the right or left side, depending probably on the ovary affected; this is accompanied by nausea, and occasionally by vomiting. The pain gradually passes off, and subsequently, following some strain producing increased intra-abdominal tension such as straining at stool, the patient has a feeling of faintness or actually does faint. The menstrual history is normal; there is no missed period, and the catastrophe bears no relation to the menstrual flow. On examination the patient is pallid, and sometimes restless and dyspnoeic. The pulse, generally rapid, thin, and running, may be slow. I have seen severe intra-abdominal haemorrhage with a pulse of 76. The temperature is usually subnormal, unless a considerable interval of time has elapsed between the

rupture of the cyst and the examination, when it may be raised. The abdomen moves with respiration, but is tender, especially on palpation of the lower quadrants; there is no rigidity. Per rectum, no mass is palpable, and there is absence of tenderness. Such a syndrome suggests a diagnosis of haemorrhage from a ruptured luteal cyst. The two conditions with which confusion is liable to occur are acute appendicitis and a ruptured ectopic pregnancy. The absence of epigastric pain, vomiting, hypogastric pain, and leucocytosis, combined with a flaccid abdomen, should exclude the former disease, and the absence of the history of a missed period and uterine haemorrhage, although not invalidating a diagnosis of ectopic pregnancy, renders it less probable.

Although the diagnosis may often remain tentative, the treatment must always be the same: immediate laparotomy, accompanied if necessary by a blood transfusion, since as soon as the peritoneum has been incised large quantities of blood escape. The operative treatment will not be considered in detail, but one or two points are worthy of further consideration. The abdomen should be opened in the mid-line below the umbilicus, the ovaries felt for, and the cystic one delivered. Should the condition be recognized, oophorectomy is contraindicated and the treatment of choice is to pass a mattress suture through the cyst wall. The blood in the peritoneal cavity should not be mopped out, but should be left, as it is quickly absorbed without producing adhesions, and acts as a slowly given blood transfusion.[6] The convalescence in the cases recorded below was speedy and uneventful. The recognition of this condition is important, and ovaries removed at operations for ectopic pregnancies should be subjected to careful microscopical investigation, especially if the virginity of the subject be called in question. Kaboth suggests that the presence of an ectopic ovum cannot be excluded unless serial sections of the tissue removed are cut and examined. This I do not think necessary; the large mass of blood surrounded by the crumpled yellow ring of luteal tissue forms an unmistakable picture macroscopically, and the histological appearances of a luteal cyst are characteristic and illustrated in Figure 2. It seems that trauma is a factor in causing rupture of the cyst and the consequent haemorrhage. There was a very definite history of this in two of the cases in the present series and also in many of those recorded in the literature. Another point worthy of emphasis is the absence of any definite relation to the menstrual cycle. The condition is more common than a perusal of the literature would lead one to suppose.

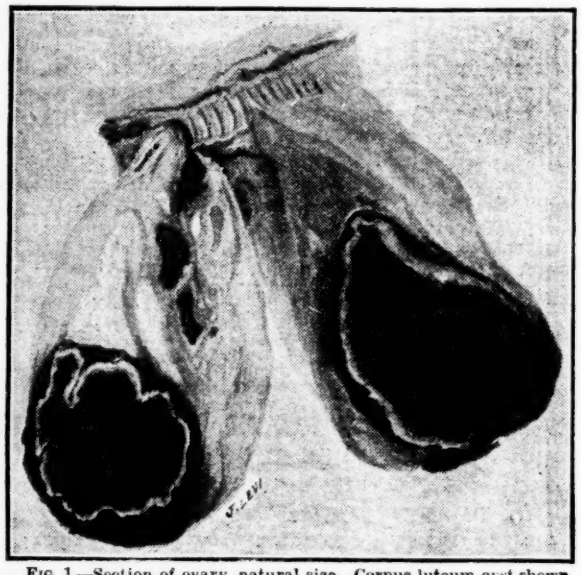

FIG. 1.—Section of ovary, natural size. Corpus luteum cyst shown with a mass of blood clot in its cavity.

CASE I.

A single woman, aged 22, was admitted on March 4th, 1926, complaining of pain in the abdomen. At 9 o'clock that morning there had been an acute attack of abdominal pain localized to the lower abdomen, accompanied by nausea, but no vomiting. During the afternoon the patient fainted while straining at stool. The catamenia were regular. The rupture occurred four days before the period was due.

On examination the temperature was 97.8°, pulse 128, respirations 26. The patient looked ill and was pallid. There was generalized tenderness over the lower abdomen, but rigidity and distension were absent. Per rectum no tenderness or tumour was felt.

Operation (5 p.m.).—On opening the peritoneal cavity two to three pints of blood escaped. The bleeding was found to come from the right ovary, which was removed. The abdomen was closed. The patient made an uninterrupted recovery.

Pathological report on the tissue removed: Ruptured luteal cyst in a very oedematous ovary. There is a comparatively large vein in the wall of the cyst which has probably given rise to the haemorrhage.

CASE II.

X, aged 31, was seen eighteen months ago. One afternoon, while straining at stool, the patient had a sudden attack of pain in the abdomen and collapsed. The menstrual history was irregular. The periods had been regular till five months before the date of illness, when there was a period of four months' amenorrhoea followed by a loss on January 1st, 1926. The rupture occurred the second week in February.

FIG. 2.—Photomicrograph of section of ovary containing a corpus luteum cyst. Yellow ring of luteal tissue surrounding blood clot is demonstrated.

On examination the patient looked ill and was blanched, the abdomen was distended and tender; pulse 140.

Operation.—On opening the peritoneal cavity a very large quantity of blood escaped. The right ovary was thought to be the site of an ectopic pregnancy, and was removed. The abdomen was closed without mopping out any blood.

The convalescence was uninterrupted. One year after the operation the abdomen was opened again for acute appendicitis. There were no adhesions present.

Pathological report on tissue removed: A ruptured luteal cyst of the ovary with haemorrhage around.

CASE III.

A single woman, aged 24, was admitted on March 13th, 1927, complaining of pain in the side. About midday on March 11th the patient had an attack of pain in the lower abdomen. The pain became more severe, and on the following day was accompanied by vomiting. The catamenia were regular. The rupture occurred ten days before the day the period should have started.

On examination the pulse was 120, the temperature 100.2°, respirations 24. The patient was collapsed and waxy in appearance. The abdomen was tender all over, but especially in the iliac fossae; there was no rigidity. Per rectum there was tenderness, but no tumour could be felt.

Operation.—On opening the peritoneal cavity a large quantity of blood escaped. Some of the blood was sucked out with a suction pump, 29½ ounces being removed in this manner; about the same quantity was left in the abdomen. The left ovary was found to be bleeding and was removed. The patient made an uninterrupted recovery.

Pathological report on the tissue removed: A ruptured luteal cyst of the ovary with haemorrhage around.

I desire to express my thanks to the following members of the staff of St. Mary's Hospital: Professor Pannett, Mr. V. Z. Cope, and Dr. W. Newcombe; also to Dr. Ling of Keighley, to whom I am indebted.

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TREATMENT OF MIDDLE-EAR SUPPURATION.*

BY

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DISEASES of the middle ear, whether of the dry or suppurative type, tend to run a chronic course unless they are dealt with promptly and energetically. Adequate treatment can be ensured only if the patient is seen regularly; but in hospital practice, where patients are drawn from the working classes, one often finds that the patient's regular attendance can be secured only at the risk of his losing his work.

Dry conditions of the middle ear which have failed to derive benefit from catheterization and massage frequently respond to treatment by intravenous injection of colloid iodine; suppurative otitis media is, however, a far more serious and dangerous type of disease, and failure to treat it adequately has undoubtedly been responsible for a large number of operations on the temporal bone.

I have been able to cure many cases of chronic ear suppuration by the subcutaneous or intramuscular injection of milk boiled for three to ten minutes and injected at body heat. The treatment has two advantages: it is cheap, and it is within the province of the general practitioner. One injection is sometimes sufficient to stop discharge, though in cases with small granulations and a fetid discharge several injections may be necessary. The injections are often followed by severe general symptoms closely resembling those of an attack of influenza. Sometimes there are rigors, and vomiting may occur. Among patients observed under hospital conditions the reaction was found to begin within an hour or two of the injection, reaching its maximum in six to twelve hours, when often the temperature would rise to 103° or 104° F., and then return to normal in about twelve hours. Most of the effects passed off within twenty-four hours, but in view of the fact that there is sometimes pyrexia for two or three days, rest in bed should always be enforced.

When I first instituted this treatment I refrained from giving it to young children; with further experience I have been able to regulate the dosage, so that children may now submit to the treatment without suffering unduly. Treatment is contraindicated in patients with cardiac or renal disease, and the risk of anaphylaxis must always be considered and guarded against. The following is a short outline of a few of the cases treated by this method.

Case 1.—A girl, aged 6, had suffered from fetid discharge of the right ear for four years. She was given an injection of 1 c.cm., to which she had the ordinary general reaction. Two days later the discharge stopped completely. After five days a further 2 c.cm. were injected, again producing a general reaction. The condition appears to have cleared up and the ear is absolutely dry.

Case 2.—A man, aged 20, was admitted to hospital on June 11th, 1928, with a fetid discharge from the right ear, from which he had suffered for seven years. There was a posterior perforation, and small granulations were present; 5 c.cm. of milk were injected, and the temperature rose to 102°. On June 14th there was less discharge, but the fetor continued; 10 c.cm. were injected, and though there was again a general reaction, there was a diminution both in the amount of the discharge and in the fetor following. On June 20th another 10 c.cm. were injected and improvement was sustained. After similar injections on June 24th and July 1st, 4th, and 15th, the patient had rather more severe general reactions, but the discharge stopped. On July 28th the ear was still dry.

Case 3.—A male infant, aged 2, was brought to me with a post-operative sinus leading to the tympanic antrum, and with fetid discharge from the ear. A Schwartze operation had been performed, but during convalescence the patient fell into the Nile, and the operation wound became septic. Healing occurred, but the granulations were indolent and fetid discharge continued to appear from the external meatus. Following a milk injection of 1/2 c.cm. he had a general reaction, but there was a diminution of the discharge and fetor, and the granulations began to heal rapidly. After the third injection there was no discharge or odour from the middle ear.

These cases are in every way typical of a large number I have successfully treated by the method of milk injections. The immediate reaction of patients treated by this method is admittedly unpleasant, but I have no doubt that if its use becomes general there will follow a great reduction in the number of operations performed on the temporal bone. The radical mastoid operation will be resorted to only in cases of cholesteatoma or when intracranial complications are threatened.

* Abstract of a paper read before the Egyptian Branch of the British Medical Association, November 14th, 1928.

SLIPPED EPIPHYSIS OF THE HEAD OF THE FEMUR.

BY

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CONSIDERABLE interest has recently ranged around the problem of separation of the upper epiphysis of the femur, and particularly where the separation has taken place without the aid of trauma. Such a case recently came under my care, the features of which may be interesting to record.

A boy, aged 14 years, was admitted to hospital as an emergency case. He was in great distress, complaining of severe pain in the left hip-joint. Voluntary movement of the left leg was quite impossible, and even to touch the region of the hip-joint caused him to scream. As the boy lay on his back the thigh was slightly flexed and the foot everted. Over the greater trochanter there was quite a marked swelling, extremely tender to touch. The general disturbance was considerable; the boy looked ill; his pulse was 124 and temperature 100.2° F. An *x*-ray photograph of the hip-joint was taken, and it showed a true separation of the upper epiphysis of the femur, the head of the bone remaining in the acetabulum, the neck slipping proximally.

The history of this case prior to coming to hospital is that for some five to six months the boy seemed off colour. His appetite had diminished, and he appeared less energetic than was usual. Five weeks previous to my seeing him he commenced to complain of an aching pain in the left hip-joint, which came and went with the degree of rest he gave it. Occasionally the pain caused him to limp. At midday of the day of admission to hospital he was standing talking with his brother when something suddenly happened to his left hip-joint which caused him to drop upon the ground. From that moment he was unable to move the limb, and the pain he suffered was extreme. There is a very bad history of tuberculosis in his family. On his mother's side eight out of ten have died from the results of bone and joint tuberculosis.

The next features of interest were noticed during the course of his treatment.

The limb was placed in flexion, abducted by the aid of a Thomas splint, and 15 lb. extension applied by means of strapping, this following manipulation under a general anaesthetic. The result was good, and complete relief from pain was at once obtained. In two days the temperature and pulse subsided to normal, and at the end of five days the periarticular swelling and tenderness had gone. On the eighth day I measured the limb, and found it to be over-extended by fully half an inch. The weights were therefore reduced to 8 lb., and on that same night the pulse and temperature again rose. For three days I allowed the reduced weight extension to remain, and each day the swing in the pulse and temperature became greater. No pain, however, had returned. At this point the weights were increased to 12 lb., with the immediate effect of reducing the pulse and temperature to normal. During the next three weeks this amount of extension was allowed to remain, and no abnormal symptoms of any sort were present. To permit of more movement it was then decided to reduce the weight extension to 7 lb., but again disastrous results followed. The temperature and pulse immediately began to swing. After three days the 12 lb. were reapplied, the result being that symptoms again immediately subsided. Although active and voluntary movement was now encouraged, so long as this extension was maintained everything remained normal.

Two weeks later the extension and splinting were removed. Function was good, and all movements were performed without pain. Only in abduction was there some limitation of movement. In spite of this, however, from the moment extension was removed the pulse and temperature again began to swing—the pulse from 80 in the morning to 110 at night, and the temperature from 98° in the morning to 100° at night. After waiting for one week to see if these would subside, and failing to get such a result, it was decided to apply a hip plaster in an abducted position. This was done, and in twelve hours everything returned to normal, and has since remained normal.

The principal features of this case are mentioned chiefly because of their etiological significance. All history of

trauma is completely absent, the Wassermann reaction is negative, and, so far as can be ascertained, no endocrine disturbance exists. S. T. Irwin, at a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on December 7th, 1928, stated that tubercle was not a causal agent in separation of the upper epiphysis of the femur. In the case described, though it is at present impossible to be dogmatic as to the cause, it seems equally impossible to eliminate the tubercle bacillus as a factor. The strong family tendency to this infection, and the behaviour of the lesion under treatment, are factors too suggestive to be lightly set aside in considering the cause of the condition and its prognosis.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CARCINOMA OF LOWER END OF ILEUM.

THIS case seems worthy of record for the following reasons: (1) the rarity of carcinoma of the ileum; (2) the difficulty of accurate preoperative diagnosis; (3) the difficulty of deciding the nature of the tumour in the small intestine by the naked eye at the time of operation; (4) the apparent absence of recurrence following only local excision of the growth and lateral anastomosis.

History.—The patient, a man aged 45 years, was admitted to the Dunfermline and West Fife Hospital on May 3rd, 1926. For six months prior to admission he had been under observation suffering from indigestion and fullness in the epigastrium, worse after food. During this time he had been very constipated, his bowels only acting with purgatives. His general condition was deteriorating, and he had been losing weight steadily. About three months prior to admission he began to complain of pruritus ani. On several occasions he had been treated for "gastritis," but on none of these had he vomited or suffered acute abdominal pain.

Examination.—The patient was spare and in poor condition. His colour was slightly sallow, and his tongue covered with brown fur. His abdomen was slightly distended, and the abdominal muscles were soft and flabby. Palpation on several occasions revealed tenderness on deep pressure over the right iliac fossa, with maximum tenderness over McBurney's point. No thickening was felt in the right iliac region, and there was no epigastric tenderness. Percussion revealed no abnormality of the liver and spleen. A provisional diagnosis of chronic appendicitis with reflex dyspepsia was made.

Operation.—On May 4th, 1926, the abdomen was opened through a right rectal incision, displacing the rectus inwards. There was a small amount of free fluid in the abdomen. The appendix, foetal in type, and acutely kinked on itself, was removed. Palpation of the duodenum, liver, and gall-bladder revealed nothing abnormal, but within the terminal portion of the ileum, about 3½ in. from the ileo-caecal valve, was felt a round mass about the size of a walnut. The mass was apparently fixed to the posterior wall of the ileum, but there was no dimpling of the serous coat at the site of attachment. The ileum was opened longitudinally, over the site of the tumour, and a small sessile growth evaginated. The growth was excised locally, and the longitudinal incision on the ileum was closed in the transverse axis of the bowel. The whole ileo-caecal region was turned upwards, and the incision on the posterior aspect of ileum, to which the tumour had been attached, was sutured in a similar manner. This suturing narrowed the lumen of the ileum so much that a lateral anastomosis of the ileum to the caecum was made. The after-treatment was uneventful and the patient was discharged on May 14th, 1926.

Histological Examination.—Dr. J. W. Dawson, Royal College of Physicians Laboratory, Edinburgh, reported as follows: "Section shows the presence of a diffusely infiltrating small-celled carcinoma. Further sections show a very marked thickening of serosa and subserosa with tumour cells."

After-History.—On June 4th, 1926, the patient had put on 1 lb. in weight, his bowels moving more regularly than they did prior to operation; pruritus ani had disappeared. On January 18th, 1927, he was again examined. He was still gaining weight, the abdomen was slightly tumid, the liver was not enlarged, and there were no abdominal symptoms. He is now doing full work and has put on 1 st. in weight.

The rarity of carcinoma of the ileum is shown by the following figures from the *Encyclopaedia Medica*: of 1,148 cases of malignant disease of the intestine (large and small) 26 cases occurred in the ileum. W. J. Mayo, in 1912, reported that of 1,498 operations for carcinoma of the gastro-intestinal tract, only 5 were for carcinoma of the ileum. The difficulty of diagnosing the condition accurately before operation is well brought out by Bland-Sutton, who, in *Tumours, Innocent and Malignant*, writes: "Cancer of the ileum gives rise to no signs which render the localization of the disease a matter of certainty." He also draws attention to the difficulty of deciding the nature of the tumour at the time of operation. In this case the diagnosis of a chronic appendix with reflex dyspepsia was made prior to operation, and it was only after the appendix had been removed and the terminal ileum had been palpated that the growth was discovered. At the time of operation there was no evidence of enlarged ileo-caecal or other glands, and the tumour, though sessile and hard, was so well defined that one formed the impression that it was adenomatous. The after-history bears out McK. Craig, of Mayo Clinic, who, reviewing 36 cases of cancer of the ileum, wrote that, "although resection of the bowel with associated glands is the operation of choice, yet anastomosis round the lesion results in a high percentage of longevity."

I am indebted to Dr. A. L. S. Tuke for his advice in this case during the operation.

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PREGNANCY ASSOCIATED WITH DIABETES MELLITUS.

WITH reference to the hospital case reported by Dr. Shirley Smith and Mr. Roques in the *Journal* of January 12th (p. 66) the following details of a case treated in the ordinary course of a country general practice may be of interest.

A panel patient, aged 20, arrived at evening surgery on April 12th, 1927, having walked a distance of about a mile up a steep hill. She looked and complained of feeling acutely ill, and gave a history of polyuria, constipation, marked thirst, air-hunger, and rapid loss of weight. Up to five days previously she had been carrying on her duties as a domestic servant. She was sent to bed, and a specimen of urine obtained on the following morning was found to be loaded with sugar; the specific gravity was 1030, and Gerhardt's test was strongly positive.

She was put on a diet consisting mainly of boiled cabbage, butter, eggs, and fish, with as little carbohydrate as we could persuade her to take. On April 13th an injection of 20 units of insulin was given with apparently little benefit; this was followed on April 14th by one of 50 units, and on April 15th by 80 units, with marked improvement in the quantity of sugar excreted. On April 16th 95 units was given, when the urine became sugar-free and Gerhardt's test negative. For the next three days she received 60 units daily, but sugar reappeared, and this was followed by the daily administration of 80 units for five days, which again caused the sugar to disappear. At this stage she was admitted to hospital for examination of the blood sugar content, but insisted on returning home on the fourth day, before a complete test had been performed. From April 30th she had 60 units of insulin daily, and gained steadily in weight, the sugar being diminished in quantity and occasionally absent. The insulin was gradually reduced, and by October she had gained upwards of a stone in weight and was taking 30 units of insulin daily.

She married in February, 1928, and in August gave birth to an apparently healthy, full-time male infant. The morning sickness was troublesome, but otherwise the pregnancy was uneventful, as was also the labour, which lasted less than twelve hours. During the early part of her pregnancy she had 20 units of insulin daily, but this had to be increased to 45 units towards the end of pregnancy; this dose was continued for eighteen days after delivery, when some mild attacks of hypoglycaemia caused us to reduce it to 30 units daily. She nursed her child, as she had an abundant supply of milk, and continues in excellent health, though the sugar is seldom completely absent. Owing to some slight recent loss in weight she has now returned to taking 40 units daily.

This case shows:

1. The successful treatment of a severe diabetic patient in general practice.

2. Agreement with the suggestion of Dr. Shirley Smith and Mr. Roques that the dangers associated with pregnancy and labour in diabetic women no longer exist.

3. Like them we had to increase the amount of insulin during pregnancy.

4. We found no necessity to reduce the amount of insulin until eighteen days after delivery.

5. The successful treatment of this case without the aid of blood sugar estimations.

M. GRAHAM DILL, M.D.,
ALFRED V. DILL, M.D., D.P.H.

Chalford, Glos.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

EGYPTIAN BRANCH.

A MEETING of the Egyptian Branch was held at Kasr-el-Aini Hospital, Cairo, on November 9th, 1928, with Colonel H. C. L. HIME in the chair.

Middle-ear Suppuration.

Dr. HASSAN BEY SHAHEEN, aural surgeon to the Kasr-el-Aini Hospital, read a paper, of which an abstract appears in this issue at page 643, on the treatment of middle-ear suppuration by the subcutaneous or intramuscular injection of boiled milk. In the course of the discussion Dr. Shaheen added that he had used the treatment with good results in cases of ozaena, acute otitis media, Bell's palsy, and sinusitis. Dr. AZUIZ EL KATTAN, ophthalmic surgeon to Kasr-el-Aini Hospital, commented on the value of this treatment in ophthalmic practice.

Compression Myelitis.

Dr. A. G. BIGGAM showed a case of myelitis in a man, aged 35, resulting from a fall on to the buttocks from a camel. Immediately after the accident there was complete paralysis in both lower limbs, sensation was widely affected, and incontinence of the bowel and bladder was present. Motor power, however, had improved rapidly, so that on admission to hospital two months after the accident paresis could be detected only in the calf muscles. Sensation was still widely affected bilaterally in the areas supplied by the fifth lumbar nerve and all the sacral segments. An *x*-ray examination showed the presence of a compression fracture of the body of the first lumbar vertebra, especially in its anterior part. Lipiodol injected by cisternal puncture revealed no obstruction at the seat of the fracture.

Treatment of General Paralysis of the Insane.

Dr. Biggam also showed a case of general paralysis of the insane that had been treated with intravenous injections of typhoid vaccine, with a view to stimulating general reactions similar to those which occur after treatment by induced malaria. Following the first four injections there was marked reaction, with rigors, sweating, and rise of temperature to 103° and 104°; but after this no reaction occurred even with large doses of vaccine. The patient derived no benefit from the treatment. Four months later he was readmitted to hospital, and received an intravenous injection of 5 c.cm. of blood from a patient suffering from malaria. The first rigor occurred on the fifth day after injection, and parasites were found in the blood. The patient continued to have rigors at irregular intervals until, after the eleventh rigor, quinine was administered. Antisyphilitic treatment was then given, but the patient showed only slight benefit.

Major W. L. FORSYTH contributed a summary of cases of general paralysis treated by induced malaria in one of the county mental hospitals in England. His impression was that the treatment, though in no sense curative, was an advance on those hitherto employed. In a few cases the process of mental deterioration seemed to be retarded, and some patients were able to leave the institution to follow their original employment. In none of the more advanced cases was there any apparent benefit from the treatment. Induced malaria could easily be controlled by intravenous quinine, and the additional course of novarsenobillon given to certain patients appeared to have no advantage. It was disappointing to find that even in cases which improved there was no corresponding amelioration in the Wassermann reaction of the blood or cerebro-spinal fluid.

Therapeutic Use of Brain-flap.

Mr. A. K. HENRY, director of the surgical unit, Kasr-el-Aini Hospital, gave an account of the rare clinical phenomenon of brain-flap, or extensive movements of the brain, synchronous with respiration, which he had studied experimentally with Professor R. Heathcote. The condition was apparently well known to Ambroise Paré, who made certain of his patients with penetrating wounds of the skull which he had treated with tampons expel blood or discharge from between the open dura and the brain by forcing them to breathe out against resistance. He thus used the expiratory or bulging phase of brain-flap in a brain the volume of which had been kept reduced by pressure. Mr. Henry expressed his indebtedness to Professor R. Dobbin, who had given him access to his collection of the writings of old medical authors. He also exhibited some drawings made by Professor Dobbin of an instrument used in 1564 by Paré for opening the skull, which embodied the principles of Souttar's instrument.

Reports of Societies.

URINARY ANTISEPTICS.

AT a meeting of the Sections of Urology, Pathology, and Therapeutics of the Royal Society of Medicine on March 21st there was a special discussion on urinary antiseptics. Mr. SWIFT JOLY was in the chair.

Dr. W. LANGDON-BROWN briefly described how the urine might become infected. Many organisms had been grown from the urine, but only a few were of practical importance—*B. coli*, *B. proteus*, streptococci, staphylococci, gonococci, and the tubercle bacillus. The enormous preponderance of *B. coli* infections was shown in a casual collection of cases which he had made from literature: of 437 cases of cystitis 199 grew *B. coli*, 109 of them in pure culture, and of 218 cases of pyelitis 174 grew this organism, 156 being pure cultures. The problem of sterilization revealed special difficulties. Was it possible to use an antiseptic strong enough to be germicidal by the time it reached the urine, and yet would not damage the tissues through which it passed? Was it possible to keep the drug in contact with the urine sufficiently long for it to exert this germicidal action? Speaking of intravenous therapy, he said that it was not claimed, even by some enthusiastic supporters of this method, that the benefits were solely due to the direct germicidal action of the injected drug. Mercurochrome had been most widely used in this direction; he quoted the experience of workers at the Mayo Clinic that it should be employed intravenously only if emergency demanded it, but that in cases of acute sepsis, when other measures had failed, it merited trial. For oral administration there were few drugs of equal reputation about which so much difference of opinion existed as hexamine. In acute cases it nearly always caused too much irritation to be tolerated, though after a vigorous course of alkalis it might be more successful. He generally gave hexamine now in conjunction with methylene blue, since it seemed much less irritating. Hexyl-resorcinol (caprokol) was the most recent addition to the long list of urinary antiseptics. Very strong claims had been made on its behalf, which, if justified, might be held to be a set-off against its almost prohibitive cost. Acid sodium phosphate was recommended by Hutchison as a method of increasing the acidity, on the ground that it was the natural acidifying agent of the urine; in giving it one must remember that only half of it was absorbed, the rest being excreted in the urine. Boric acid appeared to act as a weak antiseptic in both acid and alkaline urine. Copaiba and sandalwood oil sometimes relieved symptoms and diminished the number of organisms in a *B. coli* infection, but it was particularly after gonococcal cystitis that they appeared to have most effect. As for vaccines, his impression was that they had never succeeded in rendering the urine sterile, but they might help to reduce toxaemia; they seemed to be more effective in coliform than in coccal infections. Dr. Langdon-Brown finally stated certain questions for discussion.

Dr. CUTHBERT DUKES reported an analysis of 28 cases of catheter cystitis in which the value of urinary antiseptics had been tested. In this disease severe infections, primarily due to pyogenic cocci, ran a chronic course, but mild and uncomplicated cases recovered without treatment in from four to six weeks. The influence of hexyl-resorcinol (caprokol), hexamine, methylene blue, and alkalis on the progress of this type of cystitis had been judged by clinical evidence, by daily quantitative estimations of pus in the urine, and repeated bacteriological examinations. Of the

seven cases treated with hexyl-resorcinol (caprokol) one recovered in thirty days and another in twenty-five days, both mild infections with a good prospect of spontaneous recovery. The remaining five derived no benefit. Of the twelve cases treated with hexamine only one got better more quickly than anticipated, and the other eleven did not benefit in any way. Most of the hexamine patients regarded the treatment as a disagreeable experience, and complained of discomfort, especially when free formaldehyde was present in the urine. In the four cases treated with methylene blue there was no sign of any favourable influence on the progress of the disease. The best results were obtained in the five cases treated with alkalis; they did not exert any antiseptic action in the urine, but they made the patient more comfortable, and might perhaps tend to shorten the natural duration of cystitis. Until some definitely curative remedy had been established the best plan of treating catheter cystitis was to keep the patient on a non-stimulating diet, to give large quantities of water, and to maintain the alkalinity of the urine. This relieved the bladder symptoms and placed the patient in the most favourable position for his own natural recuperative powers to overcome the infection.

Dr. PHILIP HAMILL said that relatively few coccal cases of urinary infection fell to the lot of the ordinary physician; the coliform infections were more common. It must be the experience of them all that they really could not push hexamine and acidification in the early stages, because of the pain produced. He had tried cases on drinking-water alone, and had been satisfied that they cleared up no more slowly than under hexamine. The difficulty was to get the patient to drink when the urine was acid and when there was pain each time the bladder was emptied. It was the value of alkaline treatment that micturition could be rendered painless, and then the patient could accept the advice to drink freely. Methylene blue made the patient more comfortable, but did not appear to diminish the quantity of pus. Hexyl-resorcinol (caprokol) was expensive, but produced comfort fairly soon, and the attainment of comfort was a very important thing. The difficulty with some patients was to swallow capsules as large as those containing this preparation. Was it possible to give a drug which made the urine bactericidal? He described an experiment which suggested that hexyl-resorcinol made the urine strongly bactericidal to *Staphylococcus aureus*, but unfortunately not to the more common organism, *B. coli*.

Mr. F. A. G. JEANS said that the effect of hexamine on a tuberculous kidney was to make it worse. Urotropine was irritating to the kidneys unless something was given to counteract it. Dr. L. P. GARROD described experiments on the rate of growth in an acid and in an alkaline urine. They indicated that the urine must be made strongly acid in order to interfere with the growth of *B. coli*; this was very uncomfortable to the patient. Mr. F. R. FEILDEN had been much impressed by the value of flavine, which he had given continually for the past nine years. It was one of the most powerful urinary antiseptics known; a dilution of 1 in 3,000 was sufficient to inhibit the growth of gonococci. He gave it with alkali because he believed it to be rather more efficient in an alkaline medium. Dr. KINGSTON BARTON said that so long as the urine was alkaline hexamine was of practically no use. The only drug that would bring down the acidity was acid sodium phosphate. From the experience of one of his patients it seemed advisable to give hexamine, not in a big dose at night, but in smaller and more frequent doses as early in the day as possible. Mr. JOHN EVERIDGE said that hexamine was a most valuable drug, and had an additional value if given some time after acid sodium phosphate. Dr. GEORGE GRAHAM was sceptical about the good results of hexamine. They were affirmed by the clinicians, but there did not appear to be pathological evidence. He had never seen a case in which it seemed to do any good whatever. Dr. ELIZABETH LEPPER described certain cases in which she thought hexamine did good.

Mr. SWIFT JOLY, from the chair, remarked that there seemed to be practically no antiseptic of any value at all at the kidney level. The greater part of the work mentioned that evening had been done in cases with organisms flourishing in the bladder. If there was any infection of the kidney, especially a coccal infection, which had continued for more than a few months, it was likely to persist indefinitely, and in time become bilateral, and end by killing the patient.

Dr. LANGDON BROWN said that the discussion had amply borne out his contention that there were few drugs about which so much difference of opinion existed. There was really very little satisfactory evidence of a pathological sort as to the efficiency of the drugs in common use, yet there was clinical evidence that the patients could be made more comfortable by the use of the drugs.

Dr. CUTHBERT DUKES, also in reply, made it plain that his own remarks had had reference only to catheter cystitis. He deprecated massive doses of alkali, which had no real object.

THE DENTAL ASPECTS OF RADIUM TREATMENT.

AT the meeting of the Section of Odontology of the Royal Society of Medicine on March 25th, with Mr. GEORGE NORTHCROFT in the chair, Mr. CYRIL H. HOWKINS of Birmingham read a short paper on the dental aspects of radium treatment.

Mr. Howkins said that radium in dental applications might be utilized in two ways—either by burying the needle, or by holding it in proximity to the growth when direct insertion of it was not possible or was inadvisable. The preliminary measures which dental surgery could undertake to assist radium treatment in malignant disease occurring in or near the buccal cavity included the removal of teeth and general elimination of oral sepsis, the removal of metal fillings, crowns, and bridges, to prevent secondary radiations which might cause necrosis, the removal of sequestrum, and the provision of some apparatus to hold or limit the action of radium, of some form of obturator to replace lost tissues, and possibly of dental splints when there was considerable loss of bone. The main problem for the dental surgeon was to design, prepare, and insert appliances, on the one hand to hold the radium in position, and, on the other, to limit the action of the radium. In either case a consultation with the radiologist was necessary, with an examination of the parts concerned and the taking of impressions. In this way a knowledge of the condition was obtained, and some idea as to the probable form of treatment, the number, size, and position of the needles, and as to the advisability of extractions and treatment of any existing teeth. The decision as to extraction depended upon circumstances. Any doubtful teeth near the growth should be removed at once, but where there were firm sound teeth some distance away, and the gingival margins were clean, he had let them remain because they were of great assistance in retaining an applicator or protector. The impressions, which should be wide ones, were taken in any suitable material—plaster-of-Paris was preferable—and then the design of the holding and protecting appliance had to be considered. An applicator to hold needles in the proximity of the growth was so arranged that the needles were about 12 to 15 mm. away, and protection was secured by means of lead to prevent the rays attacking healthy tissues. The needles were inserted into shallow grooves and fastened by thread or wire, or in some cases by hard wax. A detached needle might be lost, with unfortunate results from more than one point of view. The cutting of the grooves should be done in consultation with the radiologist, and the model of the appliance in wax submitted to him for any observations he might make. As the appliance might have to be worn for from two to fourteen days, some form of firm retention was necessary. For this purpose springs, bands on remaining teeth, and upper and lower plates with "blocks" in place of teeth had been used. The material employed might be vulcanite or some form of "base plate"; the lead to protect the parts not to be irradiated must be incorporated or firmly fixed to the material. As the appliances were movable they might be taken out and cleaned when necessary, and immediately reinserted. It was extraordinary how well the patients behaved and how they endured the discomfort. The results had so far proved most satisfactory, and radium treatment in selected cases had opened up a fresh channel in which the dental profession could exercise its ingenuity.

Reviews.

JANET ON GONORRHOEA.

DR. JULES JANET is the oldest and most experienced of all living authorities on the subject of gonorrhoea, and his recent work on the diagnosis and treatment of blennorrhagia[1] cannot fail to be of the greatest interest to all who are called upon to treat venereal disease. His book is essentially a personal one, giving the results of a lifelong study.

The first part is devoted to a general consideration of the subject of gonorrhoea, and furnishes a warning to all who may be inclined to treat this disease lightly and to discount its gravity and danger. The second part deals with diagnosis in men; in it the author insists that the doctor who treats the trouble himself must make a bacteriological examination, and for this reason he supplies a careful morphological and biological study of the gonococcus. Following this comes an account of treatment, starting with abortive treatment by means of argyrol, and continuing with an exposition of the method of lavage with which the name of Janet is so closely associated. In carrying this out he insists on the use of an exact technique, and remarks on the frequency with which the method is wrongly applied. In a later chapter dealing with treatment he utters a necessary note of warning on the limitations of instrumental treatment. Following the apathetic period of treatment before the war came a time when experts in venereal disease attempted to eradicate the gonococcus by means of numerous and ingenious instruments. The urethra was subjected to dilatations, ionization, cauterization, and suction, with in many cases disastrous results. The urethral mucosa is easily damaged, and too often as a result of much instrumentation a gonococcal infection was followed by a chronic traumatic lesion. While recognizing the value of some of these forms of treatment in special cases, Janet declaims against their general use. The third part of his book is devoted to gonorrhoea in women, a disease which is even less satisfactorily treated than male gonorrhoea. In this chapter Janet's chief message is that, on the whole, there is a general tendency to neglect focuses of infection in the region of Skene's tubules and Bartholin's glands.

Among the more interesting of the later chapters are those devoted to infections of both parties in marriage, and to the problem of the marriage of the male who has suffered from chronic gonorrhoea. In describing the former Janet points out that when both parties are infected an immunity is soon established. If, however, a third person has sexual connexion with either of the infected members an acute form of the disease is only too likely to result. Concerning the marriage of a patient who has suffered from chronic gonorrhoea in the past, he is inclined to adopt an optimistic attitude. During recent years many authorities have used the method of spermo-culture as a means of determining whether gonococci are still present. As a result of the investigations of a series of cases, such authorities as Guepin, Lebreton, and Barbillon have stated that as many as 80 per cent. of cases of chronic gonorrhoea show the presence of gonococci in the sperm, and are, therefore, potential carriers of the disease. Janet discusses these astonishingly gloomy results, and points out that if they are to be accepted without qualification it would mean that marriage with a man who had suffered in the past from chronic gonorrhoea would be so dangerous as to be prohibitive. In his experience, although the infection of a bride by her husband is unfortunately no rare event, such a disaster is not as common as the results of spermo-culture would indicate. From his own case-sheets he would estimate the frequency of infection at 3 per cent. rather than at 80. At the present time he sees no means of reducing still further this risk, for there does not exist any method of analysis which can give complete and immediate security to any girl who marries a man who has suffered in the past from a chronic gonococcal discharge. Even a negative spermo-culture furnishes no complete guarantee. At the end of the work is appended a bibliography which covers twenty-seven pages.

It is almost unnecessary to say that the publication of Janet's book is an event in the world of venereal literature. While there are many points on which younger venereologists will differ with him, it is impossible to set aside lightly the opinions of the doyen of experts in gonorrhoea.

[1] *Diagnostic et Traitement de la Blennorragie.* Par Dr. Jules Janet. Paris: Masson et Cie. 1929. (6½ × 10, pp. 536; 143 figures. 60 fr.)

MODERN NEUROLOGY.

IN *Recent Advances in Neurology*[2] Drs. W. RUSSELL BRAIN and E. B. STRAUSS have given a full and satisfactory account of current neurological practice and theory, more particularly from the point of view of British workers. They devote chapters to the circulation of the cerebro-spinal fluid, with notes on the work of Weed, and the use of lipiodol in the diagnosis of spinal block; to intracranial tumours, basing their classification on the well-known work of Cushing, Bailey, and Penfield, and describing the use of ventriculography and the interpretation of ventriculograms; to the visual pathway and its disturbances in intracranial lesions; to the intracranial regulation of the cerebral circulation; to posture and tonus, and the clinical application of the work of Sherrington, Magnus, and other physiologists on the static aspect of muscular activity; to the work of British neurologists, especially Walshe, on paraplegia and hemiplegia; to the cerebellum and the extrapyramidal system; and to miscellaneous therapeutic advances, including an account of the ketogenic treatment of epilepsy. The chapter on Pavlov's work, though interesting, is too brief, and might with advantage include a consideration of the work of Krasnogorski on the development of the conditioned reflexes in children. Perhaps an English translation of Pavlov's book on the activity of the cerebral hemispheres will be published in time to secure adequate discussion in a future edition. The authors give a good account of epidemic encephalitis and the neurotropic viruses, though these are large subjects and difficult to present in compact form. Under miscellaneous therapeutic advances the ketogenic treatment of epilepsy is well set out. Altogether Drs. Russell Brain and Strauss are to be congratulated on a thoroughly creditable presentation of a difficult subject, with a well-balanced discussion of opposing views.

A TEXTBOOK OF MEDICINE.

THE development of specialism in medical practice is reflected in the tendency to produce textbooks in which the writing of each section is entrusted to a separate author, the function of the editor being mainly to choose his contributors, in the first instance, and then to ensure uniformity of manner and freedom from overlapping and disproportion of parts. *A Textbook of Medicine*,[3] edited by Dr. J. J. CONYBEARE, has ten such contributors, whose aim appears to have been rather to give an account of knowledge gleaned from many sources, and of the general consensus of opinion regarding their allotted subject, than merely to record personal experience. In addition to the usual subjects treated in textbooks of medicine, this volume of nearly 1,000 pages includes sections on diseases of the skin, diseases of infants, the common cold, and examination for life insurance. Clinical methods and details of laboratory technique have, for the most part, been omitted, and physical signs (in the editor's opinion better learned at the bedside) are described only sketchily. Speaking generally, the subject matter is clearly presented, and due weight is given to recent work. On the other hand, though much of the classification adopted is orthodox, certain exceptions call for comment. Von Jaksch's anaemia, for example, is grouped with diseases of the ductless glands, and no mention is made of the abnormal red and white corpuscles which are among its diagnostic features. The diagnosis of tuberculosis of the mediastinal glands is

[2] *Recent Advances in Neurology.* By W. Russell Brain, D.M.Oxon., M.R.C.P.Lond., and E. B. Strauss, B.M., B.Ch.Oxon., M.R.C.P.Lond. London: J. and A. Churchill. 1929. (5¼ × 8¼, pp. xii + 412; 38 figures. 12s. 6d. net.)

[3] *A Textbook of Medicine.* By Various Authors. Edited by J. J. Conybeare, *M.C.*, M.D.Oxon., F.R.C.P. Edinburgh: E. and S. Livingstone. 1929. (Demy 8vo, pp. xiv + 976; 16 figures, 8 plates. 22s. 6d.)

inadequately described, no mention being made of D'Espine's sign. In the section on diseases of the kidney not enough account is given of nephrosis and haemorrhagic nephritis, and the mechanical factor in many cases of chronic pyelitis is insufficiently stressed. The author of the section on respiratory diseases seems to overrate the significance of foreign proteins in the etiology of asthma. It must, however, be emphasized that these criticisms concern points of detail only, and that the book as a whole is, in our opinion, sound and adequately representative of modern views. Dr. Conybeare has himself contributed a great part of the work, and has shown considerable skill as editor in linking up the various sections.

OPHTHALMOLOGY.

A NEW manual of ophthalmology, entitled *The Eye*,[4] has recently appeared from the pen of Dr. C. W. RUTHERFORD of Indianapolis. Its aim is to provide a textbook for the student of medicine and a reference work for the general practitioner. The whole of ophthalmology is gone through systematically, each separate organ of the eye being treated seriatim, and dealt with under the headings of anatomy, clinical examination, and diseases with their appropriate medical and surgical treatment. In the first three chapters the lids, the lacrymal apparatus, and the orbit are considered. A large amount of space is devoted to the various plastic procedures which may be required for one reason or another on the lids; in the section on the lacrymal apparatus repeated probing as a method of treatment is recommended, and when operation is decided upon, excision of the sac is considered the method of choice, it being suggested that drainage operations into the nasal cavity are inadvisable owing to the fear of a spread of infection. There follow sections on the conjunctiva, the cornea, and the sclerotic; two chapters on the ophthalmoscope and the visual fields are interpolated, after which the inner parts of the eye are dealt with—the uveal tract, the retina, intra-ocular tumours, the optic nerve, the vitreous, glaucoma, and the lens. The remainder of the book is occupied by a consideration of the extra-ocular and intra-ocular muscles and refraction, and it concludes with a note on industrial injuries, their compensation and simulation.

On the whole the book follows very closely orthodox lines, and the teaching is essentially safe and sound throughout; while in this way it performs its essential function, it leaves little room for the original or distinctive in its pages. We are inclined to think that its most useful sphere would be as a reference book for the general practitioner; in its pages he will obtain much useful information presented in an easily assimilable form, and he will be guided over many of the pitfalls which ophthalmological cases present in general practice. For the student of general medicine—in this country at least—the volume is too expensive when compared with the other manuals of equal merit which are available. For the ophthalmic specialist, on the other hand, it is not detailed or critical enough, and for his purposes some recent developments in ophthalmological technique (such as, for example, the slit-lamp) have not been fully noticed in its pages. Like most American textbooks, the volume is extremely well produced; it is clearly printed and illustrated throughout.

ETIOLOGY OF PEPTIC ULCER.

REDWITZ and Fuss's pathogenesis of peptic ulcer,[5] which forms the forty-second volume of the New German Surgery edited by Küttner, should prove a useful work of reference in all questions relating to the etiology of that disease. The authors have undertaken the laborious task of bringing together and classifying every factor that can be regarded as being of direct or accessory etiological significance, and this has involved an examination of all the recorded work done on the subject. They have scrutinized the whole of the literature up to the middle of the year 1927, and the publications referred to, more than three thousand in number, form the basis of the work.

In dealing with the numerous etiological factors concerned the authors state very fully and impartially the evidence pointing to the significance of each and any criticism that may be urged against its acceptance. They remark that the enormous amount of work which has hitherto been carried out on the subject of gastric ulcer has not led to the adoption of any generally accepted doctrine, but to various and often contradictory theories, and this has, apparently, been due in large measure to the tendency to seek for some single specific cause, applicable in all cases. Acceptance of the view that a number of factors, variously combined in different cases, are concerned in the etiology is likely to lead to greater unanimity, and an accurate knowledge of all contributory pathological conditions present in individual cases cannot but be of importance in determining the line of treatment. It is not enough to know that a gastric ulcer may take origin in a necrotic patch in the mucous membrane as the result of local arterial obstruction or bacterial or toxic action; of more practical importance is the recognition of the accessory factors which tend to render chronic the ulcer resulting from the primary defect. Inquiry has to be made as to the possible retention of the stomach contents; mechanical conditions leading to deformity of the organ, such as ptosis and stenosis; the presence of altered conditions of the blood, hindering healing of the ulcer, and general circulatory or nervous affections having a like effect; the presence of chronic diffuse gastritis; and the possibility of auto-intoxication from hepatic or renal disorders. Whether an actual local bacterial infection may cause the continuance of an ulcer is, the authors consider, an open question; but the presence of the ulcer itself is recognized as an accessory factor in chronicity, by exposing the subjacent tissue to the action of the gastric juice, and causing irregular secretion, spasm of the pylorus, and irritation of the muscle of the stomach. Finally, a possible hereditary or constitutional predisposition has to be taken into consideration. These and other factors are discussed at length in this book, which affords the means of obtaining a good grounding in a complicated subject.

PHYSICS FOR STUDENTS OF MEDICINE.

PROFESSOR SIDNEY RUSS has produced an attractive handbook on *Physics for Medical Students*,[6] in which his purpose of presenting the subject with an eye to the student's future preoccupations has been well achieved. Each of the nine chapters deals concisely with one branch of physics, and while the physics of sound occupies only nine pages, and that of magnetism only twelve, much more space is allotted to the consideration of such topics as mechanics and current electricity, as being more important in a medical curriculum. The mechanism of muscular action is described and illustrated; it is calculated, for example, that a 10 st. man exerts a pull of some 26 st. with his tendo Achillis in raising himself on his toes, knowledge with which the student will be the better able to apply himself to the treatment of fractures of the lower extremity. The style of the book is clear and free from unnecessary detail, although here and there one finds excursions into trigonometry. The principle of the microscope is dealt with, perhaps, rather too briefly—a few words about the oil-immersion lens and a reference to dark-ground microscopy might have been included. There is an account of blood spectra on page 121, in which it is stated that citrated blood is examined. Specimens for this purpose should, of course, be made up with distilled water, not citrate solution, citrated blood being opaque. A purist might also object to the statement on page 145 that "tubes of force" are "sometimes referred to as lines of force." The book is well printed and the illustrations, which are mainly line drawings, are excellent. On page 109 "distance of distant vision" should, no doubt, read "distance of distinct vision."

[4] *The Eye*. By C. W. Rutherford, M.D., F.A.C.S. New York and London: D. Appleton and Co. 1928. (Roy. 8vo, pp. xxvi + 404; 305 figures, 11 plates. 30s.)

[5] *Die Pathogenese des peptischen Geschwürs des Magens und der oberen Darmabschnitte*. Von Dr. Erich Freiherr v. Redwitz und Dr. Hans Fuss. Neue Deutsche Chirurgie, 42 Band. Stuttgart: F. Enke. 1928. (Roy. 8vo, pp. xiv + 387; 76 figures. M.44.)

[6] *Physics for Medical Students*. By Sidney Russ, D.Sc. Edinburgh: E. and S. Livingstone. 1928. (Demy 8vo, pp. vii + 230; 130 figures. 10s. 6d. net.)

NOTES ON BOOKS.

MR. CHARLES FOX, who is lecturer in educational psychology at the University of Cambridge, has written a volume on *Practical Psychology*,[7] which will be found invaluable to students of education, for whom it is primarily intended. The author expresses the hope, also, that it may have a wider appeal, since although the material has a definite educational bias, it ought to be of use to others who are interested in the practical psychology of the higher mental processes from other standpoints. The course of work here presented has been given for some years to students of education in Cambridge University. All the tests are quantitative, as the course is meant for class use. The book would appear to fill a gap in the literature concerned with experimental psychology.

We are told by Professor WILBUR PARDON BOWEN that kinesiology is the science of bodily movement. The word is not to be found in the *Concise Oxford Dictionary*, and therefore this interpretation is not superfluous, even when *Applied Anatomy and Kinesiology*[8] has reached this, its fourth, edition. This book is doubtless intended principally for the use of teachers of gymnastics and so-called "physical jerks," for much of the information contained in it on anatomy and physiology, as well as many of the illustrations, are to be found in the standard textbooks of physiology or manuals of human anatomy. Nevertheless, there is much in the book to interest trained anatomists, and to remind them of the problems of combined muscular action, but we are surprised to find no reference to the important subject of muscular tone, on the strength and normality of which the maintenance of correct posture in the erect position so much depends. The American Posture League, of whose activities we hear from time to time, is much concerned in encouraging correct posture, and in recommending such appliances of everyday use—for example, chairs and desks—as will enable good posture to be maintained at the least expense of neuro-muscular force. The photographs showing the action of the superficial muscles in the performance of various athletic exercises, such as throwing, putting the shot, etc., are interesting, as well as those of some industrial occupations.

Though Dr. A. C. GARNETT intends his book on *Instinct and Personality*[9] to present and apply an original standpoint in psychology, he has striven to make it comprehensible to the reader who has no special knowledge of the subject with which it is concerned. The writer develops a "hormic" theory of life. He takes the view that the simplest form of living organism is inexplicable in terms of chemistry and physics, and that the process of evolution must be interpreted as a striving toward the individuality which is manifested most clearly in man's conscious nature. The conclusion is finally reached that before animate organisms appeared on this planet, horme, life-force, *élan vital*, or "urge" existed, in some form, in inanimate nature. "This is a stupendous conclusion," Dr. Garnett writes, "and when we remember that matter itself seems to be resolved into something of the nature of 'drive' and organization, it is but a step to the conclusion that even inanimate matter is the creation of what, from the standpoint of our limited experience, we can best describe as universal Horme." It is evident that much thought has been expended in the preparation of this volume, and the author has been quite successful in making his views clear to the educated reader.

We have received the three numbers of the English edition of *Messrs. E. Merck's Annual Report*[10] for 1928. This publication is now issued thrice yearly. The volumes contain reprints of a few short articles on special drugs, but consist chiefly of abstracts of literature relating to the action of drugs. Inspection of the references shows that the great majority are to work that appeared in 1926. The volumes form a very useful reference book for obtaining information about work that has been done recently on drugs, and particularly on new proprietary remedies. Some of the drugs of particular interest of which an account is given are ephedrine, plasmoquine (the new synthetic substitute for quinine), psicaine (the new synthetic local anaesthetic), and thallium acetate, a drug which is used as a depilatory in ringworm. These reports are issued free to members of the medical and pharmaceutical professions on application to the publishers (E. Merck, Chem. Fabrik, Darmstadt).

A second edition, long overdue—the first was published in 1922—of Dr. W. J. TURRELL's book on *The Principles of Electrotherapy and their Practical Application*[11] is now available. So much has been added, so much revised and rewritten, that it is almost a new book, rather than a second edition. Especial attention has been given to the high-frequency currents, the good results following on the treatment of pneumonia by diathermy, and to Jellinek's important work on the causes of death from high-voltage electricity. We reviewed very favourably the first edition, and have an equally good opinion of the second. The author is an original thinker and writer, and his book, in which his own opinions are very much in evidence, is on this account all the more valuable.

[7] *Practical Psychology.* By Charles Fox, M.A. London: Kegan Paul, Trench, Trubner, and Co., Ltd. 1928. (Demy 8vo, pp. xvii + 180; 19 figures. 7s. 6d. net.)

[8] *Applied Anatomy and Kinesiology.* By Wilbur Pardon Bowen, M.S. Fourth edition, thoroughly revised. The Physical Education Series. London: H. Kimpton. 1928. (6 × 9½, pp. xv + 356; 224 figures. 18s. net.)

[9] *Instinct and Personality.* By A. Campbell Garnett, M.A., Litt.D. London: G. Allen and Unwin, Ltd. 1928. (Demy 8vo, pp. 218. 8s. 6d. net.)

[10] *E. Merck's Annual Report*, 1928, Parts i to iii. English edition. Darmstadt: E. Merck. (Demy 8vo, Part i, pp. 152; Part ii, pp. 304; Part iii, pp. 309-464.)

[11] *The Principles of Electrotherapy and their Practical Application.* By W. J. Turrell, D.M., B.Ch., D.M.R. and E. Second edition. Oxford Medical Publications. London: Milford, Oxford University Press. 1929. (Demy 8vo, pp. xvi + 413; 34 figures. 16s. net.)

PREPARATIONS AND APPLIANCES.

AN APPARATUS FOR OBTAINING CONTINUOUS RECORDS OF HUMAN BLOOD PRESSURE.

MR. J. H. THOMPSON, B.Sc. (Department of Physiology, Middlesex Hospital Medical School), writes: Since my preliminary communication[1] appeared the apparatus for recording human blood pressure continuously has been considerably improved in several directions. It is now possible to obtain records for unlimited periods of time without causing the least discomfort to the subject. The instrument is sufficiently sensitive to record accurately the most rapid fluctuations in blood pressure, and is designed to indicate on the recording surface variations of blood pressure in terms of millimetres of mercury. By means of a simple device the results can be magnified or diminished. The improved apparatus consists of a water manometer, one limb of which is of greater diameter than the other, with a reservoir into which the fluid can be emptied at the conclusion of an experiment. A specially constructed glass float already described carries the recording pointer.

In the earlier experiments the apparatus was connected with a sphygmomanometer bag. After a period of five minutes the venous congestion was considerable and much discomfort was experienced by the subject; it was impossible, therefore, to record continuously for a longer time than ten minutes. A special armlet has been devised whereby these untoward effects are eliminated. It consists of two wide strips of aluminium joined by a hinge on one side and by a "throw-over" catch on the other. One strip is perforated by a piece of narrow rubber pressure tubing which is connected to a small rubber bag, about two inches square, resting within the concavity of the metal band. The bag is connected to a T-piece, one limb of which leads to the manometer and the other to a small metal hand pump. The other strip is also perforated with a metal screw-rod, to which is attached a small metal plate suitably padded. The armlet is placed over the elbow so that the bag rests upon the brachial artery, the catch is secured, and the plate screwed until the whole armlet is firmly fixed in position. The bag is then inflated and a record taken. It is found that by using this apparatus no venous congestion occurs, and the veins on the lateral and posterior aspects of the arm (which are not compressed) are sufficient to maintain an adequate venous return. With the arm comfortably supported, subjects are able to give continuous records for over an hour without any discomfort.

Tracing of human blood pressure as recorded by the Thompson sphygmanograph. Time in two-second intervals.

Several precautions must be taken in using the apparatus. It is advisable to place a three-way tap between the inflator and the apparatus, since the slightest leak in the apparatus results in a slow persistent fall on the record. It is almost impossible to obtain inflators which do not leak. It is therefore best to interpolate a three-way tap, so that after the inflation has been done the pump can be eliminated from the pressure system. It is also important that the subject should keep still. It will be readily understood that slight movements of the biceps muscle will cause rises of pressure within the bag. These are easily discriminated by their sharp outline and rapid return to the original base line. But they are apt to spoil a good tracing, and in this laboratory the practice has always been to request the subject to remain perfectly quiet.

It is obviously of value, however, to be able to record blood pressure during movement on the part of the subject—for example, during exercise. In order to make this practicable another armlet has been made for the wrist. It is elliptical in shape and the bag is long and very narrow, to fit the groove between the radius and the flexor carpi radialis tendon. Otherwise its structure is comparable to the brachial armlet. Experiments performed with this wristlet indicate that variations in blood pressure can be recorded equally well, excepting that the individual heart beats are not so large. But the great advantage is that the subject can move about and actually exercise the arm without any mechanical disturbance of the pressure system.

This sphygmanograph is now made in portable form by W. Pitman, c.o. this laboratory. Patents have been applied for.

[1] Thompson, J. H.: *Lancet*, ii, 1928, p. 284.

British Medical Journal.

SATURDAY, APRIL 6TH, 1929.

THE CHANGED OUTLOOK ON CARDIAC DISEASE.

MANY of those engaged to-day in general practice have a vague feeling that modern research in cardiology, so especially associated with the names of James Mackenzie and Thomas Lewis, has largely revolutionized the teaching about heart disease to which they were accustomed in their student days. To some extent this is true. There has, indeed, been an addition to our knowledge, and, if we may so express it, a subtraction from it. Owing largely to the help of the electro-cardiograph, a knowledge of the contraction of the various chambers of the heart has been obtained which did not exist formerly. Consequently, some order has been introduced into the chaos of cardiac arrhythmias which previously were so jumbled up together and inadequately differentiated that neither the meaning of sinus arrhythmia, which is hardly pathological, nor the relative unimportance of many kinds of extra-systole was in the least understood. Again, though auricular fibrillation may have been dimly recognized under the form of the "mitral pulse" or "delirium cordis," its essential significance was by no means realized. Digitalis, doubtless, was given in such cases, and given with success, yet no one knew that this success was due to the introduction by the drug of a partial heart-block. Though at first it required the string galvanometer to make scientific distinctions between the various arrhythmias, fortunately they can now in most instances be recognized clinically without instrumental methods.

On the other hand, we must subtract from some of our previous knowledge, in particular that which concerned itself with murmurs, for their significance has been much diminished by modern teaching. In medicine, as in religion and politics, there is always a tendency to rush to extremes when any new doctrine is being inculcated, so that some disciples of the new cardiology have been inclined to convey the impression that most murmurs have no importance at all. Certainly in the past a disproportionate amount of study was devoted to murmurs, and whereas previously their meaning was overestimated, it now runs the risk of being unduly minimized. Murmurs are easy to recognize and easy to teach upon, which may account for the great amount of time and learning which has been bestowed upon their origin and transmission from a purely mechanical and acoustic point of view. But the essential change brought about by modern cardiac research is in directing attention to the primary importance of the heart muscle. It must not be supposed that our predecessors were not fully alive to the importance of the heart muscle; thus Laennec, the discoverer of mediate auscultation, spoke of the condition of the myocardium as "the key to cardiac pathology," while William Stokes in 1834 said that no matter what the heart affection may be, "its symptoms mainly depend on the strength or the weakness, the irritability or the paralysis, the anatomic health or disease of the cardiac muscle." But teachers, not unnaturally, have followed the line of least resistance, and have found it easier to give instruction about murmurs, which are there for everyone to hear, than about the myocardium, which, until it is grossly degenerated, may give no evidence of impairment, and may, indeed, cause sudden death in persons who have shown no signs or obvious symptoms of heart disease.

Apical systolic murmurs are now generally believed to be due rather to weakness of the myocardium, perhaps only temporary, which prevents the coaptation of the mitral valve, than to the presence of an organic valvular lesion. We realize now that though the presystolic murmurs of mitral stenosis and the diastolic murmurs of aortic regurgitation indicate the existence of a definite valvular lesion, they provide no definite knowledge as to the strength of the myocardium, and only to a minor extent give a clue to the cause of the lesion. But in any cardiac affection a knowledge of the cause is supremely important; indeed, as the late Professor Huchard used somewhat paradoxically to say, in the case of valvular lesions it is more helpful to know the cause of the lesion than which valve is affected. A structural lesion due to rheumatic fever and its congeners is likely to remain stationary, a fact which may afford ground for a favourable prognosis; on the other hand, a lesion due to syphilis or arterio-sclerosis is likely to be progressive, so that the outlook must necessarily be more unfavourable.

It may be that, apart from the very important knowledge we have gained of cardiac arrhythmias, our diagnosis of cardiac affections has not greatly advanced in the past generation, nor, when once the heart has broken down, have our methods of treatment greatly improved, except in the more scientific administration of digitalis. But considerable advance has been made in the prognosis of cardiac affections. More and more it has come to be realized that in every case of heart disease a knowledge of prognosis is vital. It is not merely a question of estimating the patient's expectation of life, but how effective his life may be made, what sort of occupation he can fill, and what kind of activities, whether physical or intellectual, he can wisely be allowed to follow. Our power to answer questions such as these has certainly much increased of late years. This advance has been brought about largely by the attention that has been directed to the estimation of the strength or weakness of the heart muscle, by careful study of the patient's symptoms, and, in particular, by observation of the cardiac response to effort. From a purely prognostic point of view it is recognized that murmurs and their varying changes have much less value than they were thought to have a generation ago.

In former days disease of the heart was held to spell, if not the likelihood of sudden death, at least the certainty of a more or less invalid life. We now know that there is an immense difference between an invalid life and a life of restricted activity. There is no question that many patients with heart disease are now allowed, and wisely allowed, to do much more

than they would have been in the past. The modern doctor, armed with additional and more securely based knowledge, unlike his predecessor, endeavours to follow the advice of Plato, who said that the patient should be prevented from nursing his disease to the neglect of his ordinary calling.

THE LOCAL GOVERNMENT ACT.

THE Local Government Bill, 1929, has now received the Royal Assent, and become an Act of Parliament. The corresponding Scottish bill will achieve the same status shortly after Parliament resumes session. Each of these Acts will constitute a far-reaching reformation of local government, and each effects a measure of reform in public health administration not less than that accomplished by the most important previous Acts dealing with these matters. The measure of practical success to be achieved by these reforms depends now upon the methods and efficiency of their administration. This is in the hands of the Ministry of Health and of the councils of county boroughs and of counties in England and Wales, and in those of the corresponding bodies in Scotland. The Scottish Act is even more far-reaching than the English, inasmuch as it affects the administration of education, which the English Act scarcely touches, and alters more widely than that Act the areas of local government.

Though very few of the actual amendments placed on the paper in order to carry out the policy of the British Medical Association have actually been embodied in the Act, the pressure exercised has not been without its effect. The clause empowering the councils of counties and of county boroughs to exercise transferred functions through the appropriate Public Health Acts instead of through the Poor Law has been materially strengthened so as to make it clear that the former method is to be adopted wherever possible. A Ministerial declaration in favour of the co-option on committees, in most cases, of persons of suitable status and experience not themselves members of the appointing councils has been obtained; and it is to be expected that suggestions on these lines will be contained in the circular which it will now be the duty of the Ministry of Health to issue to local government authorities. Owing largely to the efficient and persistent help of Lord Dawson, a new requirement has been secured that councils, before taking action as to the provision of hospital accommodation or deciding on the uses to which it shall be put, shall make such arrangements as they think desirable to consult any body within their area which they consider representative of the governing bodies and of the medical staffs of local voluntary hospitals. None of these things goes as far as the Association would have wished, but each is an important step in the direction desired; and it is a matter of great moment that in every area the medical profession, through the appropriate Division or Branch of the Association, should exert its influence in order to bring about suitable administrative action.

The immediate action required from the councils concerned is the preparation of an administrative scheme for performing the functions transferred to them from the Poor Law guardians. Each council must submit such a scheme to the Minister of Health for his approval before the end of September next; and, on submission, must advertise locally the fact that this has been done and that representations thereon may be made to the Minister within a period of four weeks. Schemes sanctioned will become operative on April 1st, 1930. Draft schemes are already being prepared in a number of areas, and it is clear that any action taken by the medical profession should not be delayed until the publication of a scheme, but should begin at as early a date as is possible. In order to assist in the effective direction of such action the Council of the Association is issuing to each Branch and Division, to medical officers of health, and to medical members of local government authorities and their committees an explanatory memorandum directing attention to the most important points. This memorandum is printed in this week's *Supplement* (p. 77), and the earnest attention of every member of the Association is requested thereto. The three points referred to above—action wherever possible through the appropriate committees and Acts rather than through the Poor Law and the Public Assistance Committee, the co-option of members of the medical profession wherever this can be secured, and the formation of a really representative consultative hospital committee—are those in reference to which the speediest action and greatest pressure are needed. The position and status of transferred district medical officers is also a matter of the very greatest importance, not only to those officers themselves, but to the whole profession in relation to domiciliary services. All these questions have their peculiar difficulties, and it is likely that with regard to some of them it may be necessary to issue some supplementary memorandums of information and advice. Meanwhile it is impossible to overemphasize the importance of the situation and its potentialities; and it is necessary to urge that all concerned in the development of public health services and the relation of the medical profession thereto should realize this, and should, after full consideration, take early and appropriate action.

DOCTOR AND PATIENT.

THERE are many things in the art of medicine which can be learnt by experience only. Nevertheless, the attempt to point out to the senior student or newly qualified practitioner the direction in which some of these things lie, to warn him against mistakes into which he may easily fall, and to help him towards an adjustment of his attitude in relation to various kinds of personality in his prospective patients, is a task well worth doing. Some such task as this has been essayed in a series of lectures delivered within the last few years before students of the Harvard Medical School, and these lectures are now published in a volume entitled *Physician and Patient*,[1] under the editorship of Dr. L. Eugene Emerson. The theme of the lectures is, in general, that it is the patient as well as the disease that requires treatment, and that the patient's mind must be taken into account as well as his body. It is probably the case that the course of training in a medical school, even the clinical instruction and observation in a large hospital, with their necessary insistence on the basic sciences, on laboratory methods, on instrumental aids, and on the observation of physical signs, do not emphasize sufficiently the human relations between doctor and patient and the need for psychological insight and sympathy. In actual practice, of course, these are all-important, even though the fact be recognized that the doctor can never know too much about his patient's physical condition. Unless a student has a character or temperament which permits of a strong development of such relationship and insight, he is quite unfitted for most branches of the medical profession, and unless a practitioner does actually cultivate them he will

[1] *Physician and Patient: Personal Care.* Edited by L. Eugene Emerson. Cambridge, Mass.: Harvard University Press; London: Milford, Oxford University Press. 1929. (5½ × 8¼, pp. viii + 244. 11s. 6d. net.)

never be really successful in his calling. There can be no doubt that these things, along with some others connected with the daily practice of his profession which are not often included in his educational course, ought to be impressed upon the student. Most of the articles in the volume under review must certainly have been, when they were delivered as discourses to a suitable audience, valuable contributions to this end. Each of them contains some noteworthy saying, some wise observation, some narration of interesting and instructive incident. That, however, which may well be said once a year, or even once in a university term, in its appropriate place, will not necessarily be useful, or even tolerable, when read nine times over within a few hours, even if the form be modified. The collection of these lectures in one volume does not make a good book for whatever class of reader it is intended. The last three of the nine essays are somewhat different in character from the rest, and are less good in themselves. They are all by Dr. Alfred Worcester, and are on the care of the aged, the care of the dying, and the attention to personality in sex hygiene. The fact that in the medical care of the very old and of the dying a time comes when all attempts at curative treatment should be abandoned, and attention should be directed solely to comforting and sustaining the patient, in spite of the fact that his friends may still be clamouring for active therapeutic measures with a view to possible recovery or prolongation of life, and that this constitutes a real difficulty at times for the practitioner, is worth setting down; but beyond this the three essays do not seem to contain much of value. To advocate that the treatment of senescence should be elevated into a specialty, and that the absence of a library of books on the subject is a disgrace to the profession, shows a sad lack of judgement and of a sense of proportion. It is to be hoped, too, that the following statement is not true of America, as it is certainly untrue of Great Britain: "The advance of medical science is now furthered only by the discoveries of the specialists. Dazzled by the brilliancy of these, general practitioners have ceased communicating to the profession even the results of their experience. Consequently in their particular fields neither medical science nor the art of practice advances." On the contrary, the advance, surely, is so great as to justify the conclusion of Dr. Thayer's lecture or parable entitled "The Medical Education of Jones: by Smith." "'Doctor,' said one of the boys, 'Have you read *Arrowsmith*?' 'No,' said Jones, 'but I will.' He read it, lay back in his chair, and laughed. 'By Jove,' said he, 'I might almost have written that myself twenty-seven years ago.'"

CREMATION IN ENGLAND.

IT is probable that the general adoption of cremation is, to some extent, hampered by the existence of a definite opposition to this method of disposing of the dead; but the greatest obstacle would appear to be a widespread reluctance to think of the matter at all. Many persons, it is true, are prepared to discuss the desirability of cremation, in the abstract; some will even discuss it in concrete terms, so long as present company is excepted. It is, however, a big step from an academic acquiescence in cremation to a willingness and a capacity to leave explicit instructions about the disposal of one's own dead body, a bigger step than most people are at present prepared to take. Nevertheless the number of cremations carried out in the United Kingdom is increasing, though very slowly, and new crematoriums are being established. The council of the Cremation Society of England, in its annual report for 1928, states that in that year the total number of cremations carried out in Great Britain was 3,436, a figure representing an increase of 5.24 per cent. over that for 1927, and of nearly 30 per cent. over the last five years' average. There are now twenty crematoriums in the British Islands, this number including the new buildings at Ipswich and Bristol, one in course of construction at Guernsey, and another at Edinburgh. The provision of crematoriums is being considered by various local authorities and burial boards throughout the country, and though their schemes may not mature immediately the council holds that the very fact that the question is being seriously discussed is evidence that cremation is coming to be regarded as the only practical solution of the problem which arises from the rapidly diminishing space available for burial purposes in and near populous centres. During the year useful propaganda has been carried out at a number of health week exhibitions in co-operation with the Central Council of Health Education, and numerous lectures on behalf of the society have been given to organizations such as the Women's Co-operative and Labour Guilds, adult institutes, and Young People's Fellowship meetings. Though no immediate results are expected from these methods of propaganda, which in the main reach the less well-to-do classes, it is hoped that the education of the masses of the public may help to bring about an alteration of the existing law, or enable the society, by some form of industrial insurance, to bring cremation within the reach of the poorer classes.

THE BROAD TAPEWORM.

THE broad tapeworm of man, *Diphyllobothrium latum*, which is not uncommon in the Scandinavian districts of Europe, has in recent years become naturalized in the Great Lake districts of Canada and the United States owing to immigration of these northern peoples. In some of the lakes a high percentage of fish are now infected, and as these are used extensively for food the dangers of a heavy human infestation would be considerable were it not for the fact that the fish are almost invariably cooked before being eaten. The infection can only be continued through the contamination of the water by the faeces of fish-eating mammals, of which man is the most important. Vergear,[1] however, has recently found that the fish in certain lakes which have a very small human population on their shores are heavily infected, and the fact that innumerable dogs abound—and it is well known that dogs, cats, and other carnivores, including bears, can harbour the adult parasite—suggests that they are the reservoirs from which the fish become infected. The parasite is long-lived and enormously prolific, producing several millions of eggs daily, and a single person can therefore infect a whole lake and keep it infected for a very considerable time. Moreover, the importance of a single infected human host is increased by the fact that fish, especially pike, can live for long periods, and so maintain the potential infectiousness of a region for years after the departure of the original source. Information as to the longevity of the parasite is in part based on the records obtained from American immigrants before it was known that the parasite had become naturalized; and these must therefore be regarded with some suspicion. However, Professor R. T. Leiper[2] records an experimental infection in himself which persisted for over five years without exhibiting any definite symptoms during most of this time. A remarkable feature of this case was the complete absence of segments in the stool, although eggs were always found when microscopic search was made. This fact is of some importance, as the presence of a tapeworm is always suspected in the first place from the passage of segments. If these are absent the parasite may exist for years without either the patient or his medical attendant suspecting its existence, and so perpetuate the possibilities of infecting the fish in any lake into which the

[1] *Journ. Amer. Med. Assoc.*, February 23rd, 1929.
[2] *Journal of Helminthology*, December, 1928.

faeces may pass. In addition to harbouring the adult tapeworm, man, especially in the East, may also harbour the larval stages of several related species which live as adults in the dog and cat. These larvae occur, among other animals, in frogs, and the parasite is acquired by its definitive host eating the frog. (It has recently been shown by Professor Faust that they will not develop in man when the larva is swallowed.) In human beings the larval stage is generally known as *Sparganum mansoni*, after Sir Patrick Manson, who discovered them in Amoy in 1882. It has always been supposed that man becomes infected by swallowing the first intermediate host—a species of *Cyclops* or water-flea—and consequently functions as a second intermediary. But Dr. Faust suggests another explanation. In some of his cases there was a history of an abscess, to which the patient, after the manner of the country, had applied "split" frogs: a similar practice is in vogue in Indo-China, where ocular sparganosis is common, to relieve severe conjunctivitis. The theory that the larvae, which are present in nearly every frog, actively migrate from the poultice to the patient is an obvious one, and has actually been proved to be possible by Dr. Faust. Spargana were placed on the orbit of a dog, and observed to penetrate the conjunctival membranes and cause the development of a severe inflammatory process. Other experiments indicated that the larvae, when introduced aseptically into the musculature, were able to multiply asexually over a period of several months—a phenomenon which may explain the rare and peculiar parasite known as *Sparganum proliferum* very occasionally found in human beings.

A TYPHOID CARRIER ON A SHIP.

In 1927 three separate outbreaks of typhoid fever occurred on a passenger ship making round trips to South America, each of two months' duration. The first outbreak occurred in January, with eight cases, the second in July, with eleven cases, and the third at the end of the year, with ten cases. It was decided that as there had been no typhoid in the other ships of the line the source of the outbreak must be looked for in the ship itself or in the members of her crew. An investigation was undertaken accordingly by Dr. J. E. Dinger of Amsterdam, for whom a laboratory, with all necessary equipment and subsidiary preparation and washing-up rooms, was built on board the ship. From his account[1] it would appear that his chief difficulties were occasioned by the constant changes of temperature during the voyage and by the movements of the ship. The scope of his investigation was fortunately limited by the discovery that, though the water supply was common to every part of the ship, all the cases recorded had been fed from the second-class pantry. Water was thus excluded as a cause of the outbreak, and the problem became that of discovering the carrier or carriers. Of the 163 persons on board who had served during all the epidemics, six gave a positive Widal reaction, but none had typhoid bacilli in the stools. Examination was then made of the stools and urine of those who in any of the voyages had come into relation with the second- or third-class passengers, or with the food of those classes. In all, the stools and urines of 256 persons were examined, and a leading hand in the engine room was found to be excreting typhoid bacilli. The first cases of the January outbreak had occurred in the engine room, and this carrier, it was found, had shared a cabin with the very first of those cases. Which of the two infected the other could not be decided. The author does not record whether this carrier gave any history of a previous attack of typhoid fever, but it is evident that he gave a negative Widal reaction. The fact that he had nothing to do with handing the food for the passengers or crew may explain the intermittence of the epidemics. After he was segregated and eventually disembarked there was no further outbreak of typhoid fever on board. Dr. Dinger, as an additional precaution, tightened up the food-handling regulations of the ship, and inoculated the whole of the crew against typhoid. He holds that protective inoculation should be carried out from time to time among the crews of all ships entering tropical harbours.

[1] *Archiv für Schiffs- und Tropen-Hygiene*, January, 1929, p. 37.

"THE HEALTH OF THE NATION."

In our review of Dr. F. E. Fremantle's book on *The Health of the Nation* in the *Journal of* October 15th, 1927 (p. 688), we expressed the opinion that future editions were certain to be required, and suggested to the author some points for notice when revision was needed. It is a pleasure to discover that a second edition[1] has already been necessary, and that some of these suggestions have been adopted. The second edition appears in the handy form of a volume of what the publishers have called the Westminster Library. A few small and quite unnecessary references of a party political character have been deleted. The paragraphs dealing with the registration of deaths now describe the new and not the old procedure, which was obsolete even at the time of publication of the first edition. The effects of the National Health Insurance Act, 1928, are described or noted, and the main relevant effects of the Local Government Bill, 1929, now an Act of Parliament, are referred to. Two small errors in this revision have caught our eye. On page 149 the new short paragraph concerning seamen's insurance is misleading. The great majority of seamen, like other employed persons, have been within the scheme of national health insurance from the beginning. Clause 20 of the Act of 1928 merely extends the scheme to those seamen who are paid, not by wages, but by a share in the profits of the adventure. This is a small but important class who were formerly denied the insurance benefits in so far as they were not strictly employed within the meaning of the Acts. On page 152 a further 3,000 should have been added to the membership of the British Medical Association there given. We are still of the opinion, even more emphatically than when we stated it in our earlier notice, that the scheme of the book almost necessitates a somewhat expanded description of additional treatment benefits (especially dental and ophthalmic benefits) under the national health insurance scheme. These are of increasing importance, and their administration is not clearly known. This book is, and no doubt in future editions will continue to be, a trustworthy guide to the subjects with which it deals and for the public for which it is intended.

[1] *The Health of the Nation.* By F. E. Fremantle, M.P., M.D., M.Ch., etc. With a foreword by the Right Hon. Neville Chamberlain, M.P., Minister of Health. Second edition. London: P. Allan and Co., Ltd. 1929. (Cr. 8vo, pp. xiv + 208. 3s. 6d. net.)

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.

THE Medical Women's International Association, of which Lady Barrett is president, will hold its quinquennial meeting in Paris from April 10th to 15th, and it is expected that representatives from some twenty countries will attend. In addition to the council and general meetings, at which the business of the association is transacted, there will be three scientific sessions on the afternoons of April 11th, 12th, and 13th, which will be open to all medical women, whether members of the association or not. The subjects for discussion are: (1) Sex instruction for children and adolescents (rapporteurs, Mme Montreuil Straus and Dr. Louisa Martindale); (2) Analgesia in midwifery (rapporteurs, Dr. Doris Kunckel and Mme Nechkovitch-Voutchetitch). The programme of social activities includes a reception given by the President of the French Senate at the Palais du Luxembourg, and

another by the President of the Municipal Council at the Hôtel de Ville. Special arrangements have also been made to visit the Radium and Pasteur Institutes, as well as several of the most notable hospitals of Paris. The meetings will be held at the International Institute of Intellectual Co-operation (Palais Royal), by permission of the League of Nations. Further particulars may be obtained from the honorary secretary of the Medical Women's International Association, Miss Martindale, M.D., 28, Weymouth Street, London, W.1.

THE MANSON AND CHALMERS MEDALS.

THE Manson Medal, awarded triennially by the Royal Society of Tropical Medicine and Hygiene, is to be presented this year to Sir Ronald Ross. It was founded in memory of Sir Patrick Manson in 1922, and has been awarded to Sir David Bruce and Senator Ettore Marchiafava. Qualifications for the medal are contributions of outstanding merit to knowledge of tropical medicine and hygiene. The Chalmers Medal was founded in 1921 by Mrs. Chalmers in memory of her husband, Dr. Albert J. Chalmers. It is awarded every second year to the younger workers in the field of tropical medicine and hygiene, who must be under 45 years of age on June 1st of the year of award. It is to be presented this year to Major J. A. Sinton, V.C., I.M.S. Previous awards have been to Professor E. Roubaud, Professor Warrington Yorke, and Dr. H. Lyndhurst Duke. Though the Manson Medal was founded in memory of Sir Patrick Manson, its first president, the Royal Society of Tropical Medicine and Hygiene is endeavouring to establish a more substantial memorial in the shape of a permanent home for its activities bearing his name. To this end the Manson House Fund was started, and already subscriptions have brought in between £4,000 and £5,000, while £3,000 has been promised on loan without interest. It is hoped that a sufficient sum will be raised to enable the society to purchase suitable premises for its headquarters.

INFLUENZA.

IN the week ending March 23rd the epidemic of influenza was subsiding in most parts of the country. Notifications of pneumonia fell from 4,897 to 3,578, and deaths from influenza in the great towns of England and Wales from 1,552 to 966. We may reasonably expect that within a few weeks the rate of mortality will again be normal, and the severest recrudescence since the pandemic an unpleasant memory.

SIR WILLIAM PROUT, K.C.M.G., relinquished his appointment as consulting physician to the Colonial Office and the Crown Agents for the Colonies on March 31st. Dr. P. H. Manson-Bahr, D.S.O., has been appointed one of the consulting physicians in London to the Colonial Office and the Crown Agents for the Colonies from April 1st.

THE KING.

SINCE March 2nd two bulletins only have been issued, at intervals of a fortnight, and each has confirmed the general impression that the King is making satisfactory progress towards recovery. During the past month His Majesty has spent many hours in the open, enjoying the sunshine and sea air, and latterly has taken short walks about the grounds of Craigweil House. The bulletin of March 29th mentioned some rheumatism round the right shoulder, and reiterated the need for prolonged abstention from all except essential public duties, but was able to record progressive gains in weight, appetite, and sleep, and steady improvement in bodily and mental vigour.

CHEST SURGERY FROM THE MEDICAL STANDPOINT.

LUMLEIAN LECTURES BY DR. R. A. YOUNG.

THE Lumleian Lectures were delivered to the Royal College of Physicians of London on March 19th, 21st, and 26th by Dr. R. A. Young, C.B.E., senior physician, Middlesex Hospital, and physician, Brompton Consumption Hospital. Dr. Young's general subject was "A medical review of the surgery of the chest," and, remarking on the ancient foundation of these lectures—which dated back to 1581—he said that there was an explicit direction that they were to be on surgery; he felt, therefore, that his choice of a subject was in conformity with the wishes of the pious founders.

BORDERLINES BETWEEN MEDICINE AND SURGERY.

Border areas, said Dr. Young in his first lecture, were usually the scene of strife and conflict, and the zone of separation between medicine and surgery was no exception. Medicine was abstract in the main, dealing with deranged organs and disturbed functions, while surgery was essentially concrete and mechanical, concerned with removal, adjustment, and adaptation. Some of the greatest triumphs of surgery were in the failures of medicine, but, on the other hand, some of the greatest surgical tragedies occurred where surgery had been unwisely or unsuccessfully invoked in medical conditions. This was most emphatically true in surgery of the chest. If this branch of surgery was to advance there must be the closest co-operation between the physician and the surgeon. The surgeon could give the most dramatic assistance to the physician in disease of the lungs, bronchi, mediastinum, and pleura, in cases otherwise grave and even hopeless. What was needed was a better understanding on the part of the physician and the general practitioner of what surgery could do, and, perhaps even more, of what it could not yet achieve. In no branch of science was efficient and co-ordinated team-work more essential, but the physician should be the predominant partner or at least have the casting vote, the surgeon being his coadjutor or agent, not his substitute.

The question arose whether, in future, if specialization advanced to its logical development, diagnosis and treatment might not be concentrated in the hands of one person. The lecturer had an open mind on this subject, but he felt that at present the ideal arrangement was an understanding and critical co-operation between the physician and the surgeon, the team also including, for the successful surgery of chest diseases, the radiologist, the bacteriologist, the haematologist, the physiologist, the biochemist, and the anaesthetist.

Briefly tracing the history of thoracic surgery, the lecturer said that the fundamental ideas in this branch of work and some of the earliest achievements stood to the credit of British surgeons, several of whose names, past and present, he mentioned. The reasons why surgery of the chest had developed later than other special applications of surgery included difficulty of access, fear of open pneumothorax, difficulty of collapsing cavities, risk of "mediastinal flutter," and fear of gas embolism. Modern developments in thoracic surgery had been rendered possible by a more accurate appreciation of the mechanics of respiration, improved methods of diagnosis, modifications in anaesthesia, rigorous selection and careful preparation of cases, and refinements in surgical technique.

Improved Methods of Diagnosis.

After some consideration of respiratory physics, the lecturer discussed the present improved methods of diagnosis, saying that diseased conditions within the chest offered some of the most difficult problems to the diagnostician. Fortunately, laboratory and instrumental methods yielded here perhaps even more assistance than in diseases of other systems. After a careful study of the clinical features of the case the first of the special methods to which resort would be made was x rays, the help of which it was difficult to exaggerate. Stereoscopic radiograms especially were sometimes of great value in establishing the depth of the morbid process and its relative

position to other structures. For mediastinal conditions oblique views might afford great assistance, while, especially in regard to abscess, bronchiectasis, and growth, a true or "dead" lateral view might give information of crucial diagnostic importance. The value of radiology in this field has been notably increased by the use of lipiodol, which enabled the bronchi to be mapped out to their finest ramifications. In his own experience he had found this measure of the greatest value in confirming and establishing the diagnosis of bronchiectasis, in determining whether this condition was localized or bilateral, and in distinguishing between it and abscess.

As for other special methods, bronchoscopy had established its value in intrathoracic conditions. Its employment in dealing with foreign bodies was now a commonplace. Thoracoscopy had enabled the conditions within the pleura to be seen clearly after a preliminary pneumothorax, also the situation and relations of new growths of the lung and mediastinum. Biochemical methods might serve an ancillary function, notably with regard to calcium content, blood sugar, blood urea, and other estimations. Complete fixation tests might give information with regard to syphilis, tuberculosis, or hydatid.

Surgery of the chest, the lecturer continued, should in nearly all cases be deliberate and unhurried. Emergency operations were exceptional; almost always there was time for the most meticulous examination, and for all necessary special investigations. The appeal to surgery should be made only after it was clear that medical measures were doomed to failure. On the other hand, in such cases the decision should be made as early as possible, certainly before the patient had become so debilitated that the risk of shock from operation outrode the chances of success. The mortality of these operations was steadily diminishing as surgical technique became more developed and the selection of cases more skilful.

Operative Technique.

The preparations of the patient varied somewhat in the practice of individual surgeons. Most surgeons insisted on rest in bed under careful observation for from seven to ten days before such an operation as thoracoplasty or lobectomy. If there was evidence of catarrhal process or any serious digestive upset, operation was postponed. In marked anaemia blood transfusion might be given, and before any operation in a condition of pulmonary excavation or dilated tubes, the utmost care should be taken to promote expectoration. The problem of anaesthesia in chest diseases was one of special difficulty. In patients with pulmonary tuberculosis it was advisable to employ local or regional anaesthesia when possible, and to use gas and oxygen rather than chloroform or ether for cases where general anaesthesia was essential. The technique of anaesthesia induced and maintained by an expert in the ingenious methods now available was admirable in its orderly and almost perfect adaptation to the needs of the surgeon.

The question of time was of great importance in a thoracic operation; therefore the ingenuity devoted to the production of special instruments for removing the periosteum from the ribs and for expediting other manipulations was very welcome, as were the time-saving details of operative technique developed by surgeons in their practice. After-care, especially in regard to the dressing applied and the degree of pressure exerted by it in cases of thoracoplasty, and the general nursing arrangements required by these patients, was of not less importance than the operation itself.

What was the help that surgery offered in the treatment of chest diseases? It helped by securing rest to the part involved, particularly in disease of one lung; by evacuating abnormal exudates at the right time and in the most effective manner; by removing foreign bodies; by causing the collapse of cavities; by excision or extirpation of growths; by the removal of diseased or damaged lung tissue which was beyond hope of repair; by decompression where intrathoracic pressure relations were disturbed; and by exploratory thoracotomy to discover whether radical surgical measures were practicable in an obscure condition. The lecturer briefly instanced the chief measures designed for these various ends, and spoke at greater length on pulmonary collapse, the basis of artificial pneumothorax treatment, pointing out that the beneficial effects of collapse forms of treatment comprised far more than the mechanical factors, and helped in bringing about the disappearance of the toxaemic features.

Surgery in Pulmonary Tuberculosis.

In his second lecture Dr. R. A. Young dealt with the treatment of severe pulmonary disease, in which, he said, the surgeon and the bronchoscopist seemed destined to take an increasing share. The earlier applications of surgery in pulmonary tuberculosis were directed chiefly to the drainage of cavities and removal of diseased areas of lung. Modern surgical methods were the outcome of the combined experience obtained by surgeons in the treatment of chronic empyema and by physicians in the use of artificial pneumothorax as a therapeutic measure. The decision as to the use of collapse treatment, whether medical or surgical, involved careful consideration of the type, extent, and localization of the disease, the clinical features of the case, and the age, personality, social state, and general condition of the patient, as well as his reaction to ordinary methods. Thorough *x*-ray examination, including the screen, was a very necessary preliminary.

Artificial pneumothorax was now so generally recognized as the routine treatment in certain cases that any detailed account of it was unnecessary. Thoracoplasty was its major equivalent, or, rather, substitute, since it should be remembered that the collapse induced by it was less than that obtained by a complete pneumothorax, though the results in successful cases were of the same type. The lecturer quoted an epigrammatic remark of Claus: "A good pneumothorax is better than thoracoplasty, but a good thoracoplasty is better than a bad pneumothorax." It should not be forgotten, however, that the collapse produced by this operation was permanent, whereas in most cases of pneumothorax treatment the lung could be allowed to re-expand at any time should extension of the disease on the opposite side or other emergency render this necessary. The safe rule was to consider for thoracoplasty all cases which were well suited for artificial pneumothorax but in which that treatment was impossible or had failed. In general, no patients should be submitted to thoracoplasty until the attempt at artificial pneumothorax had been made.

Indications for Collapse Treatment.

The type of case likely to benefit most from collapse treatment was that in which there was more or less extensive disease of slowly progressing type and chronic course in which the signs were clinically unilateral, and in which *x* rays showed very little damage to the opposite lung. For cases in this group thoracoplasty should only be considered if there was definite evidence of some natural tendency towards arrest, or, in other words, only if the processes of fibrosis and contraction predominated over those of caseation and softening. In haemorrhagic cases there were two indications for artificial pneumothorax treatment: (1) as a deliberate treatment in cases of repeated haemorrhage; (2) as an emergency measure in severe haemoptysis endangering life. Thoracoplasty in such cases should only be considered when artificial pneumothorax proved to be impracticable, and then only after a phrenic evulsion had been tried and had failed. Collapse methods were helpful in cases where partial arrest had been achieved by ordinary medical methods, but where the patient was left with cough and expectoration; also in cases with predominantly basic signs in which phrenic evulsion had failed to secure arrest. It was rather a paradox that cases in which spontaneous pneumothorax had occurred in the course of active disease of localized character did not do so well, when the pneumothorax was continued artificially, as ordinary cases of primary artificial pneumothorax.

Contraindications to this treatment might be afforded by either the character and extent of the disease or the general condition and temperament of the patient. When there was extensive active disease in the opposite lung, or laryngeal tuberculosis of the miliary type, or severe

renal tuberculosis, the treatment should not be pursued. In patients with poor physique and marked dyspnoea or with any considerable degree of cardio-vascular debility, or with severe visceroptosis, or with chronic nephritis, again the treatment was contraindicated. In patients over the age of 60 the chances of success with artificial pneumothorax were comparatively small, while for thoracoplasty the age restrictions were more definite, few patients over 45 being suitable, though each case was to be judged on its merits.

The Operation of Thoracoplasty.

Paravertebral thoracoplasty was now established as the standard surgical method of inducing pulmonary collapse. The most important preliminary was to induce the patient to make every effort, immediately before operation, to clear the chest of expectoration. The general preference was for gas and oxygen anaesthesia. Some surgeons preferred the two-stage operation, for which the lecturer expressed his own preference. He had never known a patient decline the second stage, because, as a rule, the first brought sufficient improvement to encourage greater hopes from the completed operation. The amount of rib removed varied with the case. If the operation was carried out in two stages it was usual to resect parts of the lower ribs from the eleventh or tenth to the sixth or fifth at the first stage, and at the second stage to deal with the fifth or fourth to the first. The first rib was, as it were, the peg upon which the others hung.

Post-operative treatment was of as great importance as the operation itself. From numerous statistics it appeared that the immediate post-operative risk had now been reduced in expert hands from more than 10 per cent. to 5 per cent. or less. After the immediate post-operative risks were passed it was important to encourage the patient to re-educate and strengthen the muscles of the shoulder and arm. One remarkable feature about the operation was the comparative slightness of the deformity resulting.

It was usually said that artificial pneumothorax failed in 30 to 40 per cent. of the cases in which it was attempted. The commonest cause of failure was the presence of adhesions, and various attempts had been made to permit increased collapse in such cases. The lecturer briefly touched on these methods, including stretching and cutting.

Abscess and Gangrene of Lung.

Intrapulmonary suppuration resulted from such a variety of causes that it was not surprising to find its causation and treatment a subject of controversy. Abscess and gangrene were often associated, but in gangrene there was a larger degree of putrefactive necrosis and greater fetor, with a larger proportion of anaerobic organisms. A striking feature brought out by some American statistics was the frequency of pulmonary abscess after tonsillectomy, possibly due to aspiration of infective material under anaesthesia. In the acute stage of abscess formation, before the abscess was localized and had become encapsulated, surgical intervention was to be avoided. It was also undesirable, in suspected lung abscess, to use an exploratory needle, which might lead to rupture into the bronchus or pleura or to infection of the cellular tissues. Many successful cases of collapse of the lung induced by artificial pneumothorax were on record, but this was not suitable for deeply seated abscess. It was in subacute and chronic abscesses that some of the most striking results of surgery were to be seen. Surgeons could usually drain the cavity readily by a one-stage pneumotomy if the pleura was adherent at the spot over the abscess exposed by the preliminary thoracotomy. If no adhesions existed the two-stage operation was necessary. Pleural adhesions were induced by stitching the lung to the parietal pleura and inserting a gauze pack; five or six days later, if adequate adhesions had formed, the abscess could be opened and drained.

The lecturer briefly referred to tumours of the lung, drawing attention to the fact that there was one form of malignant growth of the lung in which lobectomy was practicable and had given encouraging results—namely, where the primary growth originated in the lung parenchyma at a distance from the hilum. He then turned to bronchial conditions and concluded with some remarks on bronchiectasis, for which, he said, many forms of surgical treatment had been suggested, and some already discarded. The general results could hardly be regarded as encouraging. The chief suggestions were to drain the cavity by pneumotomy as in abscess (clearly only suitable where there was a single large cavity); ligature of the branch of the pulmonary artery to the affected lobe (of little ultimate value); phrenic evulsion (worth a trial in obscure cases); thoracoplasty (less satisfactory in its results here, on the whole, than in tuberculosis); and lobectomy (not to be lightly recommended on account of its heavy mortality). It was to be hoped that in this condition surgery would be able to render fuller assistance at some time in the future.

ACUTE EMPYEMA.

In his third and concluding lecture Dr. Young dealt with surgery in pleural and mediastinal conditions, remarking that probably the pleura was one of the first parts of the body upon which surgery was successfully practised, while the mediastinum, owing to difficulty of access and complexity and importance of the structures contained, was one of the last to afford a safe field for the surgeon.

The first of the abnormal conditions in the pleura to demand consideration was acute empyema. The principles of modern treatment were clearly stated by Hippocrates, who advised no drainage until the fifteenth day, used irrigation, and recognized the necessity of keeping the wound open until the infection had subsided. Unfortunately, the Hippocratic rules were for many centuries disregarded or forgotten, and until recently the treatment of empyema formed a lamentable chapter in the history of medicine and surgery. One of the most notable advances was marked by the report of the Empyema Commission of the United States Army, consequent upon the experience of the great war. The Commission came to the conclusion, the high average mortality in the military camps notwithstanding, that death should not occur in cases of empyema, other than tuberculous empyema, unless complicated by such conditions as lung abscess and suppurative pericarditis. Graham, a member of the Commission, pointed out the marked difference between empyema due to the streptococcus and that due to the pneumococcus, and suggested that the high mortality in streptococcal cases was the result of applying in their treatment the principles commonly and correctly applied in pneumococcal cases. The most important outcome of the Commission's report was that empyema was not to be regarded as an acute surgical emergency requiring operation as soon as recognized. If there were acute symptoms these could usually be relieved by aspiration until it was clear that the time for operation had arrived, as judged by the examination of the pus and the general condition of the patient. Empyema was not to be regarded as an abscess, which should be opened as soon as recognized, but demanded the most careful investigation of cause, situation, and size. Too early evacuation was dangerous, and led to increased mortality; on the other hand, when frank pus was obtained, delay and inefficient drainage led to chronic empyema, "more easily prevented than cured." Dr. Young explained with great care the difference between streptococcal and pneumococcal cases. In the latter, as there was a walling off at a very early stage, earlier operation was permissible, and, indeed, desirable.

Methods of Treating Empyema.

The lecturer reviewed the procedures of aspiration and of drainage by closed and open methods. Continuous aspiration, often recommended, had its disadvantages; it was capable of giving good results, but it had not established itself for general use. When it had been decided to evacuate an empyema by thoracotomy there was still a choice of procedures. That an empyema could be successfully drained by a tube introduced through a simple intercostal incision was certain, but if the empyema was slow to clear up bone might form around the tube from periosteal irritation, and actually prevent the closure of the sinus after the tube had been withdrawn. The removal of a small piece from one rib ensured better drainage, and seemed rarely to lead to any bone infection. After the

pleura had been opened the routine method was to insert a tube and apply open drainage, with or without irrigation. This, if done at the right time and in the right situation, gave good results in most cases, but in general it was less satisfactory than the more modern method of closed drainage, with some special arrangement for securing negative pressure within the empyema cavity, and, if desired, with means to permit of irrigation. The simpler the apparatus the more likely it was to be effective. Two subsidiary aids to the treatment of empyema after thoracotomy consisted, one in efforts to assist expansion of the collapsed areas of the affected lung in order that it might fill up the pleural space caused by the empyema, the other (less generally accepted), irrigation of the empyema cavity, most generally by Dakin's fluid.

Chronic and Tuberculous Empyemas.

The causes of chronic empyema were too early opening in streptococcal cases, also unduly delayed opening, insufficient or ineffective drainage from incision at wrong spot, entrance of foreign bodies, such as swabs or pieces of drainage tube, formation of bony ring around drainage tube, pocketing, and broncho-pleural fistula. The first essential was *x*-ray examination, with and without lipiodol, to discover the size, character, and direction of the space or sinus and the presence of pocketing, or perhaps the existence of a second undrained empyema. The lecturer discussed various procedures, all of which, he said, however, involved operative manipulation in patients already debilitated by long discharges and diminished vital capacity, and so not to be undertaken lightly.

Pus developing in the pleural cavity in association with pulmonary and pleural tuberculosis was a most troublesome condition, and might be a serious complication. The term "tuberculous empyema" was somewhat loosely applied to a number of conditions, including tuberculous pyothorax, tuberculous pyopneumothorax, and cases of pyopneumothorax due to lung rupture or puncture in which secondary infection had occurred—a most grave condition. The outlook for all such patients, apart from active treatment, was extremely serious. The lecturer quoted some statistics furnished by his colleague Dr. L. S. T. Burrell in which a notably high mortality in cases in which purulent effusion occurred, as compared with those in which the effusion was serous, led Dr. Burrell to aspirate all cases in which there was pus, and to try to get the lung to expand. These purulent effusions in tuberculous disease should never be treated by open drainage, since this could only lead to pneumothorax with permanent external opening. Another method of treating cases with tuberculous effusion was by introducing oil into the pleural cavity; this method of oleothorax was still on trial, but seemed to be of use in selected cases.

Before leaving the subject of the pleura, the lecturer touched on haemothorax, the general principles of the treatment of which had been established by war experience. Operation was unnecessary in cases of uninfected haemothorax of small size. With large effusions, causing dyspnoea or distress, early aspiration was practicable and advisable. Early operation was indicated in large simple haemothorax in a state of massive clot.

Surgery in Mediastinal Conditions.

At present there was only a restricted field for surgery in the mediastinum. The real barrier was the danger of infection of the loose intervening areolar tissue. The superior and anterior mediastinum was exposed by splitting the sternum; the posterior by dividing and shingling the ribs upon one another after certain sections had been removed. Conditions in which the physician might require the surgeon's aid were suppurative mediastinitis, mediastinal tumours and cysts, and mediastinal emphysema. If suppurative mediastinitis had become localized it could be reached by the surgeon and drained. Chronic mediastinal abscesses were usually the result of tuberculous conditions of the mediastinal glands or of the bony walls of the cavity; they were usually to be treated like other "cold" abscesses, by aspirations and injections. Encapsulated tumours and cysts could, as a rule, be removed readily and without undue risk. A large majority of the primary growths in this situation were sarcomatous, and the chances of diagnosis of primary mediastinal malignant growth at a sufficiently early stage to warrant surgery were at present small. The relief afforded by decompression procedures was slight, and not commensurate with the severity of the operation. In rare cases of acute mediastinal emphysema, spreading to produce general subcutaneous emphysema, it might be helpful to make an incision near the jugular fossa and extract effused air by suction.

In conclusion, Dr. Young confessed his optimism with regard to the future of the branches of surgery of which he had been treating. An opened pleura properly safeguarded need now have no greater terrors than an opened peritoneum. Some measures, like paravertebral thoracoplasty, had already evolved to a high degree of scientific and practical adaptation. He hoped for further progress, including improved methods of pneumolysis, and in this hope he was encouraged by having seen phrenic paralysis develop from a relatively ineffective operation into one of wide application and usefulness.

Scotland.

Treatment of Cancer in Glasgow.

THE thirty-eighth annual meeting of the Glasgow Royal Cancer Hospital was held in Glasgow on March 22nd. The report for the past year stated that the ordinary income amounted to £7,668, and the ordinary expenditure to £9,527. Extraordinary income in the form of legacies, etc., had been received amounting to £7,143, with a credit balance of £5,284. Reference was made in the report to the recent gift of £10,000 by Lady Burrell for the purchase of radium. It had been decided by the directors to form a radium institute, and property adjoining the hospital had been purchased for that object. The institute was to be under the supervision of a full-time medical officer, and was to be available for the treatment of patients in Glasgow and the West of Scotland, while it was also hoped that radium could be lent to other hospitals in the neighbourhood. The chairman, Sir John M. MacLeod, stated that it had been decided to appoint a committee of lay representatives of the institutions concerned, which was to act in a purely advisory capacity without executive powers and with no control in the internal action of any of the hospitals. Mr. H. F. L. Fraser, in the course of an address, said it was now definitely established that radium offered hope for a very large percentage of cancer cases. In Britain they had fallen rather seriously behind in the question of radium surgery, for Britain as a whole had been too conservative in the adoption of new remedies. It was necessary that those who used radium should have special accommodation and special skill. The importance of radium had been realized by the Government, who had appointed a scientific research committee to investigate the situation. As a result of the report of this committee, an authoritative statement on the Government's attitude was to be made at an early date. It was to be desired that surgeons on the whole should be interested in the work of radium, so that knowledge of its application should not be left in the hands of one or two men. Co-operation among hospitals with regard to the purchase of radium and its application was also an urgent need, while some arrangement ought to be made whereby the radium in the West of Scotland would be available to all institutions, so that they would not require to buy more radium than was necessary to treat all their cases.

Royal Victoria Hospital Tuberculosis Trust.

The annual meeting of the Royal Victoria Hospital Tuberculosis Trust for the cure and prevention of tuberculosis throughout Scotland was held at Edinburgh on March 20th. The chairman, Sir Ralph Anstruther, said that they were gradually finding as the years went on that tuberculosis had been dealt with more and more satisfactorily. The death rate from all forms of tuberculosis in Scotland during 1887 was 265 per 100,000, while in 1927 it had fallen to 100. The past year was the fortieth anniversary of the foundation of the Victoria Dispensary

for Tuberculosis, and the beginning of the modern campaign against tuberculosis was marked by the establishment of that institution. At the present time tuberculosis dispensaries were to be found all the world over. Following the Victoria Dispensary, the Edinburgh scheme had included the establishment of a sanatorium (the Royal Victoria Hospital), a tuberculosis school, a working colony, a sanatorium colony at Southfield, a tubercle-free dairy, and a chair of tuberculosis in the University of Edinburgh. Three large institutions, constituting the chief factors in the tuberculosis equipment of the Edinburgh Corporation, were transferred by the committee of the Trust to the city of Edinburgh in 1914. Tuberculosis was little understood forty years ago, and one of the most striking advances had been the gradual shifting of the doctor's outlook from the adult or adolescent patient to the child. On account of the universality of infection in childhood, and the possibilities which such infection might involve for the individual and for the community, it was necessary that the advent of tuberculous infection should be watched for, and that appropriate measures should be taken to ensure that the infection became practically innocuous. A practical part had been taken by the committee in a movement which promised much for the Highlands and Islands of Scotland. An important educational mission throughout the whole of Great Britain had recently been undertaken by the National Association for the Prevention of Tuberculosis, and in connexion with this a senior medical officer and three deputy medical commissioners have been appointed to tour the country continuously. The deputy commissioner assigned to Scotland, Dr. Harley Williams, had already covered a large part of the country, and had held over 300 meetings of one kind or another. The research department was admirably equipped, and during the year several important lines of work had been undertaken. The committee desired to appoint two special workers in the research department, and would recommend the department to the consideration of benevolent donors, as it is anxious to obtain £600 per annum for this special purpose.

Work for the Blind in Edinburgh.

The Rev. Dr. Thomas Burns presided at a social meeting attended by the industrial workers of the Royal Blind Asylum, Edinburgh, held in Edinburgh on March 19th. He stated that this asylum was the second institution for the blind to be founded in Great Britain. The Blind Persons Act of 1920 had entrusted the care of these people to local authorities. The Corporation of Edinburgh had accordingly made arrangements with the Royal Blind Asylum by which they contributed an annual sum towards the maintenance of employable blind persons within their area, while the local and education authorities contributed towards the cost of training the workers. The cost of maintaining the ninety trainees at present in the institution was over £2,750 per annum. This Act of 1920, although it had benefited the institutional blind, had, however, done nothing to improve the condition of the aged and infirm blind, or those incapable of work. The question of obtaining after-employment for trainees was being carefully considered by the directors at the present time, and it appeared that new industries for the blind and new outlets for the work produced by them would be the best solution of the problem. The two new industries of cane chair making and quilt making, although satisfactory, were not sufficient by themselves and still further new outlets must be found. This could best be done by co-operation between the workers and the management, since additional employment could doubtless be secured by putting into practice the ideas of the workers, and adopting them as staple industries of the institution if they proved successful. It was pointed out that in 1913–14 the wage paid to workers in the Royal Blind Asylum amounted to 20s. per week and under, whereas at the present time it was 50s. per week. A comparison was also of interest between the amount contributed to the general funds in 1909–10 and 1919–20, which amounted to £1,468 and £2,814 respectively, being an increase of 91 per cent., while in 1927–28 the increase over 1920 was £5,000, or 177 per cent. The voluntary contributions towards capital expenditure of the new workshops, etc., amounted to £10,576. The institution had never been in a more healthy condition during the long period of its existence, and the directors looked forward with confidence to the future.

Edinburgh Maternity Hospital.

The eighty-fourth annual meeting of the Edinburgh Royal Maternity and Simpson Memorial Hospital was held on March 22nd. The report stated that the total number of cases treated was 3,205, compared with 3,117 in the previous year. Progress had been made in regard to the proposed amalgamation with the Royal Infirmary; committees representing the Royal Infirmary and the hospital had been considering the maternity problem in Edinburgh, and the number of beds which the managers of the Royal Infirmary should be expected to provide in the new buildings, to be erected on the site of George Watson's School, in order to provide for the teaching of medical students and the training of nurses. It was decided that not less than 120 beds should be aimed at, and plans had been prepared which were being considered by a joint subcommittee. The accounts showed a deficit of £1,892, and this had to be withdrawn from reserve. The chairman said that the report emphasized the close connexion which existed between the town council and the Royal Maternity Hospital. Last year a fresh record had been set up in the history of the institution, for the figures represented 40 per cent. of the total births recorded in the city during the year. The ante-natal care of women was one of the great branches of preventive medical science, and the fact that 11,169 visits had been paid by patients during 1928 to the various clinics in connexion with the ante-natal annexe was a sure sign that it had the confidence of the public. He appealed for increased financial support to the hospital, and stated that it would be six or seven years before the amalgamation with the Royal Infirmary could be brought about.

Hospital for Cripples.

A meeting of the general committee and subscribers of the Edinburgh Hospital for Crippled Children was held in the City Chambers, Edinburgh, on March 20th. Lord Provost Sir Alexander Stevenson presided. The chairman said that a conference had been held two years ago at which it was clearly shown that an urgent need existed for the provision of a hospital for the treatment of cripples. They could now report that £50,000 had been raised, and this was a tribute both to the zeal of the committee and to the generosity of the people of Scotland. A site had been secured at Fairmilehead, which occupied a commanding position at the crest of a hill, and the building when erected would be one of the landmarks of the city. It was to be a central institution to meet the requirements of the south-eastern area of Scotland, and of the counties of Kinross and Clackmannan, and the western half of Fife. Although a sum of £75,000 was required, he had no doubt that the balance would be forthcoming. The constitution was unanimously adopted.

Perth Royal Infirmary.

The annual meeting of the County and City of Perth Royal Infirmary was held on March 4th. The report showed that the number of patients treated in the institution had been 2,666, while the expenditure during the past year had exceeded the income by £2,436. It was reported that the directors had decided to erect a nurses' home at an estimated cost of £15,000 on a site adjoining the hospital. Bailie Thomas Hunter, J.P., who proposed the adoption of the report, referred to the probability of closer co-operation between the hospital and the local authorities under the proposed new legislation, but expressed the hope of the directors that the institution would not in any way come under State control.

Glasgow Hospital Sunday Fund.

The thirty-fifth annual general meeting of the Glasgow Hospital Sunday Fund was held on March 20th in the Merchants' House, Glasgow. This fund was inaugurated in 1893, and the total sum disbursed since that time amounted to £229,467. As a result of the contributions for 1928 a sum of £9,600 had been divided among the three infirmaries in the city. Dr. James Macfarlane of the

Glasgow Royal Infirmary, presiding at the meeting, stated that the collections had been gradually declining since 1920, those of 1928 having fallen somewhat short of those of the previous year. Bishop Reid of Glasgow pointed out that though it was disappointing to find that the amount subscribed in the past year was down, they were thankful that the number of congregations contributing had increased from 522 to 555, while the number of Sunday schools had increased from 301 to 310.

England and Wales.

Voluntary and Municipal Hospitals under the Local Government Bill.

A MEMORANDUM[1] has been prepared by a special committee of King Edward's Hospital Fund for London, under the chairmanship of Mr. J. H. Whitley, dealing with the position of the voluntary hospitals after the Poor Law infirmaries have been transferred to the county authorities under the Local Government Act. The principle is enunciated that the maximum of efficient medical service cannot be achieved except by co-operation between the voluntary and the municipal hospitals. The committee, however, is of opinion that such co-operation will only be successful in bringing the municipal hospitals to a high standard if there is no interference, direct or indirect, with the voluntary element in the hospital service. Voluntary hospitals have acquired a tradition and prestige which, combined with the free scope they offer to initiative, have attracted to their service men and women of conspicuous ability. Success in creating an efficient and adequate hospital service will not be obtained by converting the voluntary hospitals into official institutions, but by developing municipal hospitals in co-operation with a vigorous voluntary hospital system. The committee suggests that supercession of the voluntary hospitals would represent not only a loss of about 64,000 beds and of contributions amounting to approximately nine million pounds annually, but of the great volume of voluntary work, lay and medical, which accompanies them. Continuous consultation between the authorities responsible respectively for the rate-supported and the voluntary hospitals is now provided for by the new clauses introduced into the Local Government Bill in the House of Lords. The committee proposes further that in each area there should be a standing joint hospitals conference, composed of equal numbers of representatives of the appropriate committee of the county or county borough council, and of the voluntary hospitals, and that this conference should consider which of the hospital needs of the area could best be supplied by the voluntary hospitals and which by the county hospitals. Wherever local circumstances permit, it is held that the appointment to the staffs of municipal hospitals of consultants experienced in voluntary hospital work would help to permeate the municipal hospital service with the spirit of the voluntary hospitals. The committee suggests that while it is impossible to lay down beforehand definite rules differentiating classes of patients and allocating them to different kinds of institutions, the difficulties might well be overcome in each locality by the proposed standing joint hospitals conference, in connexion with its periodical estimates of the hospital needs and hospital accommodation. In the training of nurses and of medical students there are already instances of interchange of facilities between the voluntary hospitals and public institutions; in the opinion of the committee it is highly desirable that there should be a further extension of these facilities, whereby the beds in the public institutions may be made generally available for medical education, both undergraduate and post-graduate.

The Birmingham General Hospital.

The arrangements for the first section of the Hospital Centre at Edgbaston, which is to be the extension of the General and Queen's Hospitals, Birmingham, are making progress, and the schedules for the proposed buildings will shortly be in the hands of the competing architects. As already mentioned in these columns, a site near the University has been offered by Messrs. Cadbury, and the suggestion is that this shall be shared by the two hospitals, which will eventually amalgamate. With this in view, both hospitals have abandoned the idea of extending their present buildings, except that the General Hospital is erecting a temporary ward in its grounds in order to meet the immediate call for more beds. In the annual report of the General Hospital, just received, it is stated that plans have been prepared for the erection of huts to accommodate sixty in-patients, and also for a new casualty department. Reference is made in the report to the loss which the hospital has sustained in the retirement of Professor Gamgee, who, as a mark of appreciation of his thirty-five years' invaluable service, has been elected consulting surgeon and presented with his portrait. The question of beds for paying patients has come forward prominently during the year. Usually there are about thirty patients in the hospital, admitted either on account of accident or for other good reason, who are able and willing to pay the entire cost of their treatment, as well as a fee to the doctor. In order to prevent the exploitation of the hospital and staff, the board is recommending the governors to set aside not more than thirty beds for such patients. Normally the charge is to be at the rate of four guineas per week, but in the case of patients who are able to pay a higher fee, who have been admitted on account of accident or emergency, or because the treatment they required could only be given at the general hospital, the charge is to be at the rate of six guineas per week. In the case of the four-guinea patients members of the medical staff are to be authorized to charge a fee not exceeding the amount payable to the hospital, and in no case greater than twenty guineas; in the case of the six-guinea patients the fee to be paid to the medical staff will be left to the discretion of the physician or surgeon concerned. The results of the Birmingham contributory scheme have exceeded expectations. It was at first considered advisable to lay down income limits to prevent exploitation by members of the scheme; but experience has proved this to be unnecessary, and by an arrangement with the Hospital Saturday Fund the certificates of works delegates are now accepted as proof of inability to pay for treatment privately.

Medical Education at the Royal Free Hospital.

A meeting was held at the London (Royal Free Hospital) School of Medicine for Women on March 21st to discuss the question of providing clinical teaching at the hospital for those who were affected by the recent decision of some medical schools to admit no more women students. Lady Barrett, who presided, said they were faced with the fact that they had to find room for the average number of women (about thirty) to whom these schools had been closed. The completion of the new building at the Royal Free Hospital for the obstetrical and gynaecological unit would set free forty beds, which would be available for general medical and surgical cases, and thus afford opportunities for teaching the extra students. But the hospital could not be asked to support those beds which could be used for private patients. It would be necessary that the beds should be endowed so that their cost to the hospital, about £5,000 a year, could be met. The beds ought to be ready in about three years, which would be the time when the new students would need their clinical instruction. It was very desirable that the medical and surgical facilities for teaching at the Royal Free Hospital should be equally extended with its other branches. If the proposal put forward were adopted there need be no women lacking facilities for a thorough medical education. Dr. Louisa Garrett Anderson said that a medical school for women alone had very great advantages over a co-educational school. Some of the French women doctors who visited the Allies' hospitals in France during the war had been surprised to find English women performing major operations, and had said that such facilities were not available in France, though they had had co-education for many years. Professor Winifred Cullis said she could not imagine the time when the London School of Medicine for Women would not be needed, even if the schools now closed to women were reopened to them. Preliminary measures were

[1] Relations between Voluntary Hospitals and Municipal Hospitals. Memorandum prepared by the Voluntary Hospitals (Local Government Bill) Committee of the King's Fund. March, 1929. George Barber and Son, Ltd., 23, Furnival Street, Holborn, E.C.4. Price 3d. net, 4d. post free.

adopted with a view to obtaining funds to increase the available medical and surgical beds at the Royal Free Hospital, so that no woman student should be debarred from entering the medical profession.

Centenary of King's College, London.

In connexion with the impending centenary celebrations of King's College, London, it is interesting to recall that almost from its inception it has played a large part in the development of medicine and surgery in this country. One of its first faculties was that of medicine; Herbert Mayo, an apostle of the Hunters, Richard Partridge, John Curnow, Bently Todd, who was largely responsible for the foundation of King's College Hospital, William Bowman, whose name is perpetuated in Bowman's capsule, Lionel Beale, and William Rutherford—the names of all these were written early in the pages of its history. Clerk Maxwell, Wheatstone, Daniell (of the Daniell cell), and John Millar Thomson were on the staff of the College about the time of the coming of Lister, and served as an inspiration to the faculty of medicine. Many of our present-day anatomists —Arthur Robinson, now of Edinburgh, Waterston of St. Andrews, J. E. S. Frazer of London, and Barclay-Smith —have been on the staff of the College; Alfred Garrod and W. E. Dixon worked on the pharmacological side. On the staff of the department of physiology have been Gerald Yeo, one of the founders of the Physiological Society, Halliburton, who was one of the first to recognize the importance of chemistry in the advance of medical science, Crookshank, subsequently the first professor of bacteriology in this country, Sir David Ferrier, remembered for his work on the localization of brain function, Sir Charles Martin, director of the Lister Institute, T. J. Brodie, whose clock, power table, and kymograph are in every physiological laboratory, Locke, who first succeeded in keeping the mammalian heart alive outside the body, Rosenheim, famous for his work on cholesterol, and Da Fano, whose work on histological neurology gave him an international reputation. The laboratories have been largely remodelled and extended, but the department of anatomy is still unsatisfactorily housed. In the appeal which has just been issued it is proposed, at a cost of £60,000, to build a new anatomy department in the immediate neighbourhood of the department of physiology.

Conference on Mental Welfare.

A conference on mental welfare will be held under the auspices of the Central Association for Mental Welfare in the Central Hall, Westminster, on April 25th and 26th. The subjects to be discussed are: (1) the effect of the Local Government Act, 1929, on the work of local authorities under the Mental Deficiency Acts; (2) the report of the special investigation carried out by Dr. E. O. Lewis on behalf of the joint committee of the Board of Education and the Board of Control on mental deficiency; (3) the report of the joint committee of the Boards of Education and of Control on mental deficiency, with special reference to educational and administrative problems concerning defective and retarded children; (4) experiments in the education and training of retarded children, with special reference to some of the recommendations of the joint committee. The sessions will continue from 10.30 to 12.30 in the morning and from 2.30 to 5.30 in the afternoon. Tickets, entitling holders to all the sessions, advance copies of the papers, and to the luncheon at the Hotel Metropole on April 26th, can be obtained at the offices of the Central Association for Mental Welfare, 24, Buckingham Palace Road, S.W.1, price £1 1s. Separate tickets for the conference and for the luncheon may be obtained at the cost of 10s. 6d. each.

An Alternative to Vaccination.

Dr. J. M. Ferguson, consulting medical officer to the Burnley Joint Hospital Board, in his report on the work at the Crown Point Small-pox Hospital during the year 1928, makes a number of interesting observations on the epidemic which broke out in the Burnley district in May, 1927. The disease at the onset, although it presented almost all the typical signs of variola major, followed a very different course. Only two of the patients had a temperature higher than 100° F., and in some, though not all of the cases, what little pyrexia there was subsided when the rash was fully developed. Secondary rise of temperature common in the major disease did not occur, pitting of the skin was absent, and there were no deaths. Of the 384 cases studied, 319 were unvaccinated, 63 had been vaccinated in infancy, in one the diagnosis was doubtful, and in another the vaccinal condition was not definitely established. The average age of the 63 patients vaccinated in infancy was over 50, and only two of them were under 21. On the other hand, of the 319 unvaccinated cases, 238 (131 males and 107 females) were under 21. Dr. Ferguson, while recognizing that small-pox is probably assuming a milder form, maintains that it is unwise to regard the danger of an outbreak of a severe epidemic as altogether passed. He makes the suggestion that in view of the poorly vaccinated condition of the town and district it might be well completely to ignore the isolation of minor cases and to allow the outbreak of the disease in its mild form to act as vaccination against variola major. Such a procedure, in his opinion, would not only be less costly than that at present adopted, but would help to render immune to small-pox persons who now decline to be vaccinated.

Ireland.

The Royal College of Surgeons in Ireland.

OWING to the illness of the President, Mr. T. E. Gordon, Mr. J. Atkinson Stoney, Vice-President, presided at the Charter Day dinner of the Royal College of Surgeons in Ireland, which was held recently in the College Hall, Dublin. Replying to the toast of "Prosperity to Ireland," the Governor-General, Mr. James McNeill, said that the Royal College of Surgeons began its corporate existence about a century and a half ago, when surgeons persuaded the Government of that time that surgery and hairdressing could not be efficiently combined. Their predecessors had foresight. Each art required now more knowledge and skill than any one person could be expected to possess. In India, however, he found about thirty-five years ago that the arts were still united, though the combination was dying out. In his time surgery in Western India was made known to the people largely by his countrymen. His first but not his only district surgeon was an Irishman whose skill won respect, and whose personality inspired universal affection. Most of the surgeon-generals in his presidency in his time were Irish surgeons, and when he was sent on duty to the West Indies the first surgeon-general he met was an Irishman. When he took a flat in London some years ago he found a good Irish doctor near him, and when he moved into a house he found in the same street an Irish doctor, who made illness a very pleasurable, though transient, diversion. As regards the general condition of the Saorstat, he thought it was very much like the state of the surgical profession: it was doing wonderfully well in spite of some unfavourable circumstances. It was not only anxious to do better, but it was energetically improving from year to year. A friendly surgeon had recently said that the correct analogy in this respect was not with surgeons, but with their patients, the great majority of whom were cheerfully ready to endure anything in the hope of getting well. The small minority were divided into two classes; one class wanted to be made so well by surgery in one day that they could compete in the Tailteann games on the next, while the other class wanted to know why they should be bothered to accept anything so inconvenient as surgery, however ill they had made themselves. The Governor added that his prime object in coming to the Charter Day dinner was to acknowledge what the College had done for Irish surgery, and to express his sincere sympathy with, and respect for, Irish surgeons, who were maintaining the traditions of an honourable profession. Sir William Taylor, proposing the toast of "The Sister College," said that there had been very close association between the College of Surgeons and the College of Physicians for nearly fifty years: both had done a great deal for the profession. Not only had they trained men to practise

their profession throughout the length and breadth of Ireland, but at least 75 per cent. of them were qualified to practise in the various territories of the British Empire. Dr. Winter, President of the Royal College of Physicians of Ireland, responding, said that both Colleges were proud of their traditions and the men that went before them—men who added credit to themselves and lustre to the Irish medical school. He hoped that the Government would in the near future see its way to endow medical research. The toast "Our Guests," was proposed by Sir William De Courcy Wheeler, who coupled with it the names of Mr. William Carrigan, K.C., Mr. E. H. Burne, President of the Incorporated Law Society, and Mr. David Barry, O.B.E.

India.

The Opium Habit.

LIEUT.-COLONEL R. N. CHOPRA, I.M.S., who is professor of pharmacology at Calcutta, has recently contributed a very interesting article on the present position of the opium habit in India.[1] It will be remembered that the Royal Commission on the use of opium in India that reported in 1895 extenuated the use of the drug in that country. Opium was represented as a treasured household remedy used extensively for medicinal, semi-medicinal, and veterinary purposes. Moreover, even opium addiction was represented as being comparatively harmless to Indians, for it was stated that moderate indulgence led to no injurious effects and did not shorten life; but that, on the contrary, it tended to ward off sickness and lessened the discomfort consequent on poor food and gastro-intestinal and malarial disease. Professor Chopra has made an exhaustive study of the consumption of opium in the various regions of India, and also of the cases of 875 opium addicts. His conclusions disagree totally with the comforting conclusions of the Royal Commission. The following are some of his conclusions:

"Our inquiries show that the habit, once formed, cannot be easily abandoned. Nor is it true that Indian addicts generally do not increase the dose and keep to small quantities without ill effects. . . . We failed to find any facts which could substantiate the statement that Indians had a greater degree of tolerance to opium and were less susceptible to its ill effects. . . . The habit once formed is as difficult to break among Indians as among any other people. . . . It [the habit] undoubtedly leads to physical, mental, and moral deterioration, and we have ample proof of it in the series of cases we have studied."

The general conclusion appears to be that the opium habit produces the same effects in Indians as it does in Europeans, and that its non-medical use is as undesirable in the one case as in the other. Professor Chopra proves by his analyses that opium addiction is a strictly localized habit in India. In most districts in India the consumption of opium is less than 4.5 kilos per 10,000 of population, which is the figure given by the Advisory Committee of the League of Nations as the opium requirement for medicinal purposes. On the other hand, a minority of districts show an enormous consumption—for example, six districts in Assam show an average consumption of twenty-five times their medicinal requirements. These figures seem clearly to indicate that there is no universal demand or need amongst the inhabitants of India for opium for non-medicinal purposes, but that opium-eating is a habit confined to certain localities. It is satisfactory to know that the Indian Government is taking steps to try to reduce the opium consumption in those areas where the consumption of opium is more than five times the amount needed for medicinal purposes.

Small-pox in Bihar and Orissa.

In the most recently issued public health report for the province of Bihar and Orissa, Lieut.-Colonel J. A. S. Phillips, the officiating director of public health, refers to the difficulties experienced in securing the vaccination of children as a measure of protection against small-pox, and mentions that among certain classes opposition to vaccination is influenced by religious beliefs. The death rate from small-pox in 1926 and 1927 was 1 per 1,000; this disease occurs in all districts every year, assuming epidemic dimensions at intervals of six or seven years. The period of these cycles suggests that the immunity conferred by primary vaccination is practically exhausted in this term, and since only a small proportion of newly born children are protected each year the number of susceptible children at the end of each cycle is very great. Efforts have been made by officers of the health department, in inspecting vaccination work, to ascertain the proportion of newly born children protected. In one area it is stated that, after allowing for infant deaths, only one-tenth of the remainder are vaccinated annually. A severe and prolonged outbreak of small-pox occurred in 1926 and 1927, accounting in each year for about 34,500 deaths, the death rates in certain districts in 1927 approaching 2 per 1,000 from this disease, while in one town the rate was 5.9 per 1,000. The question of making primary vaccination compulsory throughout the province is now receiving consideration, and while there are apparent financial difficulties Colonel Phillips points out that any additional expenditure involved would be easily justified. As already mentioned the religious beliefs of certain sections of the population constitute another obstacle to progress in this direction. The classes concerned hold that small-pox is a visitation of the goddess Sitala and that it is inexpedient to interfere with her workings.

[1] *Indian Journal of Medical Research*, vol. xvi, No. 2, p. 389.

Child Welfare in Burma.

The medical inspection of schools and school children has been steadily improving in Burma during recent years, but Lieut.-Colonel E. Bisset, director of public health for Burma, states in his report for 1927 that, until a fully organized public health staff is created in each town and district, it will be impossible to give adequate attention to the 350,000 children attending the 5,600 vernacular schools. In the meantime, only the children of the comparatively well-to-do are being cared for systematically for the most part, and these probably require it less than the children of the poorer classes. Medical inspection is compulsory in all Government schools other than vernacular schools, but it is still optional in aided establishments. Complaints have been received from a large number of school medical officers that many parents seem quite apathetic as regards the health of their children, and that advice given is not followed. Thus, at one school, out of 139 cases of defective teeth, only 12 were cured. A measure of improvement has followed the extension of invitations to parents to be present during the inspection of their children, and some medical officers have reported a considerable quickening of interest where this practice has been adopted. At one school the employment of a trained nurse to ensure obedience to the instructions given by the medical officer has proved very effective. Elementary hygiene is now being taught in the schools, and it is hoped that this will result eventually in the appearance of a new generation of parents more intelligent and responsive than their predecessors. Various hygienic improvements have been effected in several schools, but a regrettable feature noticed in many cases was the apparent absence of any facilities for recreation. Colonel Bisset adds that, in view of the importance of organized games and drill in physical, mental, and moral training, it is to be hoped that improvement will follow in this respect also.

Leprosy Survey in Travancore.

With a view to inaugurating a campaign against leprosy in Travancore a health survey party, under the auspices of the Indian Council of the British Empire Leprosy Relief Association, has commenced an investigation in Trivandrum. It is hoped to determine the actual incidence of leprosy in Travancore, where it is believed to have increased by 85 per cent. in the last ten years. Which classes of the population are the most affected will be determined, and a comparative study is being made of the conditions in the leprosy and non-leprosy areas. It is hoped that information of etiological and prophylactic importance will thus be obtained. The introduction of new methods of treatment in the State Leper Asylum and open leprosy clinics will be undertaken. The Travancore Government is assisting the survey party actively, and has given facilities to subordinate officers of the medical department to undergo special training, which will enable them to co-operate more actively in the coming campaign.

Correspondence.

THERAPEUTIC VALUE OF ULTRA-VIOLET LIGHT.

SIR,—In the Medical Research Council's report reference is made to two investigations of the effects of rays from the mercury vapour lamp upon the health of a group of "subnormal" infants and a group of school children in London. The scientific value of these investigations is rightly assessed highly because in both cases "control" groups were studied; when, however, the Council fails to admit as evidence all the other clinical work that has been done on the subject, many clinicians whose experience of ultra-violet light in rickets has made them enthusiastic in favour of it will feel bound to protest. Ascertained scientific facts may be the truth, but that they are not necessarily the whole truth is a matter of medical history.

The Council states that "prolonged researches . . . give no scientific reason at all to suppose that the treatment of rickets is better effected by ultra-violet rays falling on the skin than by direct provision of the necessary food values." But those of us who have worked at light clinics in industrial districts, and who know so well the practical working conditions, will be profoundly unconvinced. We remember the wretched specimens of infants with digestion impaired, unable to tolerate cod-liver oil, and the ignorant, careless, or harassed mothers who could not be depended upon to give it. We remember how often cod-liver oil failed us under those conditions, and how, on the other hand, ultra-violet light effected not only a rapid cure of rickets, but a marked improvement in the general health. I, personally, tried dietetic and hygienic measures in the treatment of hundreds of cases of rickets at Motherwell child welfare centres from 1919 to 1924, and I freely confess that the adverse conditions proved too much for me. From 1924 to 1925 a series of cases which had practically failed under this treatment responded rapidly to ultra-violet light. In 1925 and 1926, when the light clinic was organized, I treated 121 cases, and rapidly achieved satisfactory cure in 95 per cent., as well as astonishing improvement in general health in the vast majority. Of course, I know that all this is not "scientific," but the success achieved was sufficiently remarkable to satisfy all concerned. In Dr. Katherine Gamgee's book on *Artificial Light Treatment of Children*, case histories in rickets are given, showing precisely similar results to mine. The Medical Research Council states that reports submitted from artificial light centres "exhibit much variation of opinion," but if these reports are studied with discrimination, I believe that no appreciable difference of opinion will be found as regards (1) the rapid cure, even under adverse conditions, of the bony lesions in active rickets, and (2) the remarkable improvement obtained in general health in such cases, including improvement in muscle tone and associated activity in waking hours, the disappearance of apathy, fretfulness, and sleeplessness, and the appearance of happiness and well-being.

The reports on the London children quoted by the Council deal with a different class of case altogether, but there is no clear indication of this distinction in the Council's statement. On the basis of these two limited investigations and of current laboratory findings, the Council seems prepared to condemn artificial light centres for rickets as unnecessary and about fifty times more expensive than alternative methods of treatment. In its estimate of cost, it appears to have entirely overlooked the fact that many children can be treated together round the lamps, thereby making the cost per case very low. Huldschinsky stated that "a single quartz lamp rationally employed can cure annually some 1,000 rickety children." But much more serious than any question of cost is the fact that the Council ignores the almost unanimous body of opinion in favour of light treatment of active rickets, expressed by clinic workers who have personal experience of it, at any rate, in the industrial districts of the North. It is a gesture which, if successful, would deprive such workers of a therapeutic armament which, in their hands, has been productive of immense benefit to child life, and such a thing at this late stage is unthinkable.—I am, etc.,

Leicester, March 23rd. H. STANLEY BANKS.

COLLES'S FRACTURE.

SIR,—It is to be hoped that the discussion in your columns on the above subject will lead to an improvement in the treatment of this common fracture. I cannot agree, however, with Mr. Bankart in his condemnation of the method of reduction taught us by Sir Robert Jones; personally, I prefer it to the brute-force advocated by Mr. Bankart. Preliminary disimpaction is, in my opinion, a most useful manœuvre, which obviates the necessity for great force in recent cases. When the fracture is not seen till two to four weeks have elapsed since the receipt of the injury, reduction is, I admit, impossible without the use of all the force of which the surgeon is capable; a wedge or other support is then a useful aid to the surgeon's hands.

Anatomical perfection is undoubtedly desirable, and should be our aim in all fractures, but every surgeon knows that in many cases small imperfections in the reduction make not the slightest difference to the functional result. The chief difficulty that besets the inexperienced practitioner is to know what minor displacement is of importance, and what he may safely disregard. In Colles's fracture, for instance, slight backward displacement is of no moment, provided there is no backward tilt of the lower fragment. It is entirely unnecessary under such conditions to inflict a second anaesthetic and manipulation on a patient in order to try to achieve anatomical perfection, as advised by Mr. Watson Jones. In the presence of much comminution it may be even unwise to be too ambitious. The older the patient the greater the latitude permissible in this respect. If the fracture had occurred higher up in the shaft, no surgeon would worry about partial backward displacement of the lower fragment provided the fragments lay in parallel planes. When, in a fracture of the Colles's type, the articular facet for the ulna is broken, every effort should be made to obtain absolutely accurate replacement.

In the final paragraph of his remarks Mr. Bankart rather implies that surgeons in charge of fracture clinics deprive house-surgeons and others of their opportunities of setting fractures. I cannot believe this is so. Whether a hospital possesses a fracture clinic or not the fractures must be treated, in the first instance at any rate, by the casualty officers and their assistants. Only after the fracture has been set and a second radiogram taken should the case be seen in the fracture clinic. This clinic should be attended by the casualty officers alternately. If further manipulation is necessary this should be done, if possible, by the officer responsible for the first setting, and only occasionally by the surgeon in charge. The functions of this surgeon, it seems to me, are to supervise generally the treatment of fractures in the hospital; to criticize, advise, and encourage those who have the advantage of seeing the cases shortly after the receipt of the injury—the ideal time for reduction—and whose duty it is to set the fractures; to undertake manipulation or operation only in selected cases; to teach the students attending the clinic; and lastly, to act as controlling liaison officer between the casualty and the massage departments. These are the lines on which we have run the fracture clinic at King's College Hospital, and they are, I submit, the right lines if our chief object is to be achieved—namely, to maintain at as high a standard as possible the routine treatment of the fractures seen in the casualty department of the hospital.—I am, etc.,

London, W.1, March 26th. H. A. T. FAIRBANK.

SIR,—I have read with much interest Mr. Bankart's able article and Sir Robert Jones's criticism of it. Sir Robert says, "the principle which underlies my very simple procedure is extension of the radius, pronation of the lower fragment, and supination of the upper." The patient comes under observation with the fracture firmly impacted, and until this is freed I fail to see how the above can be effected.

The whole matter centres around the question of impaction. Except in the hands of Sir Robert Jones and those who have attained his skill, extension of the radius merely means extension of the wrist-joint, and completely fails in the majority of cases to disimpact the

fracture; if successful, then the pronation of the lower fragment and supination of the upper can be carried out. I have on many occasions endeavoured to follow Sir Robert's instructions, with uniform want of success, hence I agree with Mr. Bankart that to attain disimpaction and subsequent reduction force and leverage are necessary; nor have I seen any injury to nerves or other soft structures.—I am, etc.,

Cooden, March 29th. DOUGLAS DREW.

DIAGNOSIS OF EARLY PREGNANCY.

SIR,—The response to the letter of Professor Johnstone concerning the Zondek-Aschheim test for pregnancy which appeared in your columns on February 9th (p. 264) has been most encouraging. Already some ninety tests have been made, and in such cases in which further clinical reports have been received the diagnosis as established by the test has been confirmed.

Experience has shown, however, that the working of the pregnancy diagnosis station could be made easier and more fruitful if certain matters of detail were improved. Commonly too much, too little, or too stale urine is sent, and often in packages that are too easily broken in transit. The requirements are 2 oz. of fresh morning urine in a chemically clean bottle, enclosed in a package that will withstand the dangers of the journey, and accompanied by the following information: date of last menstrual period; parity; menstrual history; history of any severe medical disturbances.

It would also appear necessary to emphasize the fact that the test cannot be made free of expense; mice have to be bought and kept, and it is to cover the cost of these that a charge of 5s. for private cases and 1s. 6d. for institutional cases is necessary. A postal order should therefore be enclosed in the package.—I am, etc.,

Pregnancy Diagnosis Station, The University, Edinburgh, March 23rd. F. A. E. CREW.

OBSTETRICS IN GENERAL PRACTICE.

SIR,—We general practitioners who read the frequent letters and articles in the *British Medical Journal* on the present state of obstetrics in England, and the maternal mortality rate, must feel ourselves in the position of a "buffer state" which has to take the blows of opposing forces, and still remain standing.

In the one camp the consulting obstetricians demand a maternity service restricted to their ranks, delegating the physiological act of childbirth to the status of a major operation for a pathological condition; on the other side are the public health authorities, who sometimes admit the value of the family doctor as a regular standby, but consider that the ideal would be for the specialist to see every patient in the course of pregnancy and in the early stage of labour.

While the contest wages over his patient head the general practitioner still carries on his maternity work, endeavouring to forestall avoidable dangers scientifically, and, in emergencies, often performing feats of skill single-handed.

Does it ever occur to the obstetric specialists that they only see the beginning and end of a maternity case, and that, usually, only under hospital or nursing home conditions? How cognisant are they of the terrible slum dwellings in which so many decent women have to bear and rear children, and the doctor fights a losing battle to deliver them under aseptic conditions? Have they any idea of the difficulties of conducting a labour in a single room of a slum tenement, where, maybe, both roof and floor are giving way, the one window is hermetically sealed, and the gas fittings are coming away from the wall? Or of working in a one-roomed dwelling where the sewer gas sends its foul emanations into the room, which fact has been reported without success to the landlord and public health authority?

Surely a little thought and study of actual conditions would show that the fault of the continued high mortality rate lies not with the doctors and midwives, but with the housing conditions in which they carry on their faithful work. Would it not be better if, instead of so lightly casting aspersions on the general practitioners of this country, the obstetric consultants and public health authorities united with their other medical colleagues to insist on better housing and the provision of more municipal maternity homes?—I am, etc.,

Oldham, March 23rd. MARY G. CARDWELL, M.D.

THE ART OF SURGERY.

SIR,—In his very kindly review of my book (March 30th, p. 603) your reviewer objects to my description of surgery as an art, on the grounds that the surgeon creates no new moral or spiritual experience, and that the values he learns to perceive are only material values. Now a short time ago I spent a happy hour contemplating the glories of the Venus of Milo in the Louvre, and yet the closest examination failed to reveal any evidence of any moral or spiritual element in its structure, and it appeared to be formed of the most substantial material. It is true that I am not a psycho-analyst, and I was probably blind to the suggestive symbolism underlying its apparently innocent outward form. But what I did perceive was that here some great artist, whose name we shall never know, had seen beneath the surface of what was perhaps some very ordinary human form, and with matchless skill of hand and eye had impressed on a mere block of marble the flowing grace, the lovely poise, the calm yet half-expectant gaze which have made his vision immortal.

It is precisely for this attitude of the artist that I make my plea. I ask my students to realize that diagnosis does not consist in the collection of laboratory reports, but in trying to see beneath the surface both of the patient and of his story; and when I go round the wards I try to impress upon them that somewhere beneath the surface, even in the most ordinary case, there may lie hidden undreamt-of possibilities. It would undoubtedly be of great advantage to all of us if many of the artists of the present day would give up the use of materials altogether and would confine themselves to moral and spiritual experiences; but I trust that future generations of surgeons will realize the essentially artistic nature of their work, and will pursue their calling as one of the greatest of the arts.—I am, etc.,

London, W.1, March 30th. H. S. SOUTTAR.

TONSIL PUNCTURE.

SIR,—We were much interested in the paper by Dr. Ramsay and Mr. Pearce on tonsil puncture published on March 23rd (p. 543). As the authors made a reference to a former publication by one of us, E. Cronin Lowe, and being interested in any advance resulting in a better method of obtaining suitable material for bacteriological examination from likely foci, we feel that this short note may add further thought for your readers.

The method of obtaining suitable organisms by means of tonsil puncture is indeed interesting. It strikes us, however, that the needle in all probability penetrates or may lodge in tonsillar crypts in its course, and therefore the organisms obtained by this method are those found actually in the tonsillar crypts and not necessarily in the tissues surrounding the crypts. We have performed such examinations upon tonsils as a definite routine of general investigation in all cases similar to those mentioned by the authors, our technique being identical in the preparation of the patient, but a straight, right-angled firm platinum wire was used to explore the tonsils for crypts, large and small. On many occasions clinically "normal" tonsils and their fibrotic remains contain crypts, single or multiple, into which such a platinum wire may be pushed, sometimes to a depth of half an inch. From such specimens it has been our invariable practice to emulsify the collected material in approximately two drops of saline solution in a tube with a wide mouth immediately after collection. From such an emulsion approximately one-half is taken from this tube and isolated by the successive streak method upon a blood agar plate. This, after a suitable period of incubation, provides a concise idea of the total organisms present, and the approximate incidence of each. It will probably be agreed that blood agar is a most suitable medium for the organisms which are likely to be present from such a focus to grow upon.

To the remaining emulsion in the wide-mouth tube 5 c.cm. of the patient's blood is added and incubated immediately. On the following day subcultures are made upon blood agar plates, and the further incubation and examination of the resulting cultures, if any, are carried out.

There appears to us to be little doubt that such technique as referred to above is preferable to that laid down by Ramsay and Pearce, since it not infrequently happens that by the "pathogen-selective method" the growth of a presumably pathogenic organism is enhanced, or appears when it is not obtained by the ordinary control method of culture. Again, employment of the direct method of cultivation gives a fair idea of the number of organisms inoculated with the whole blood, and is therefore an index of overplanting or not, which may quite easily be done. Furthermore, the simple method of tonsil crypt culture, as described above, has, in a group of 100 rheumatic cases examined by us recently, shown very similar findings to those of Ramsay and Pearce, in that 20 per cent. were negative pathogen-selective cultures, and 80 per cent. positive by the same method. This, therefore, suggests that there is no evidence of better cultural results obtained from the tonsil puncture method, interesting though it is, than from those obtained by using the simple crypt culture technique.

We have little doubt that this pathogen-selective method, originated by Solis-Cohen, is a definite advance in an attempt to obtain the pathogenic organism or organisms from suspected foci. Theoretically, the method "holds water," and many points could be put forward as to its feasibility, but the time is inopportune. The application of such a method, although encouraging, needs a great deal more study before final conclusions are stated, and since many hundreds of cases falling into definite clinical groups have been examined by such a method by us, we welcome this publication.

Let us not, however, again fall into disrepute on the value of tonsil cultures, as we did over the wholesale extraction of teeth, but rather view the tonsil as one potential area for organisms or their toxins to be absorbed, and at the same time test out fully by similar methods all other potential foci of infection.

We fully agree that the pathogen-selective method is of great importance to our colleagues, for it frequently shows where the focus of infection lies, and therefore calls for conservative or radical treatment. There is little doubt that the time has come for a closer co-operation between the clinical pathologist and his colleagues; and so long as we remember there is truth in both methods of attack, then marked curative therapeutic advance will be made. We hope that many more pathologists will be stimulated to apply this fascinating method of pathogen-selection, but a further warning note should be observed—namely, do not stray too far from the original application of the method—for what appears at the present time to be a valuable and simple technique may, as the result of modifications, become valueless.—We are, etc.,

E. CRONIN LOWE.
HUGH SMITH.

Liverpool, March 27th.

DEEP X RAYS AND THE CELLS OF THE BLOOD.

SIR,—The article in the *British Medical Journal* of March 23rd (p. 542) by Drs. Knott and Watt on "Some effects of deep x rays upon the cells of the blood" raises an important point as to the reaction of certain localized infections to radiation treatment.

In their experiments with normal and leukaemic blood *in vitro* they found that irradiation produced complete loss of all phagocytic power in the polymorphs within about thirty-five minutes. If the same blood changes occur *in vivo* it will be necessary to reconsider the question as to why a single dose of x rays so often produces a favourable result in cases of boils, carbuncles, and in the early stages of erysipelas.

Recently I was able to abort a boil on the upper lip of a young boy. Lymphangitis, enlarged submaxillary glands, and a high temperature were present, and it appeared as though incision would be inevitable. However, after an application of x rays, resolution rapidly followed, and the temperature dropped to normal.

On other occasions I have observed that carbuncles which have resisted ordinary treatment have responded quickly to x-ray therapy. Good results have also been reported by Coyle, Ross, Dunham, Richards, Lewis, and Hodges; the last of these published a full account of his results in the *Journal of the American Medical Association*, October 24th, 1925. In this report he states that in moderate-sized carbuncles of the forearm, with lymphangitis extending nearly to the axilla, the pain was relieved and the red lines of lymphangitis had disappeared within eighteen to twenty-four hours following x-ray treatment. He found irradiation particularly valuable in large carbuncles which commenced to discharge copiously within twenty-four hours, this being followed by local and general improvement. Hodges suggests that these good results are due to the x rays causing a greater activity of the cells and an increase in the phagocytic powers of the blood. The response to the treatment is so rapid that it is probably not due to any action on connective tissue cells.

We have therefore to face two facts. Laboratory experiments *in vitro* prove that the phagocytic powers of the blood are abolished by irradiation, while clinical observations on the living subject suggest (but do not prove) that phagocytic powers are increased. This apparent contradiction should open new fields for research.

First, do localized infections respond well to irradiation because of an increased phagocytic index? Secondly, if the phagocytic index is not increased, what is the mechanism which is responsible for the rapid improvement? Thirdly, will the experiments *in vitro* show the same result with medium voltage therapy as with deep x rays, since it is the former which are used with such good results in the treatment of skin infections?

Drs. Knott and Watt suggest that the destructive effect on the blood is due to secondary radiations. With medium voltage x rays the proportion of secondary radiations will be much less, and it is possible that the smaller dose may produce a stimulating and not a depressing effect on the phagocytic power of the leukocytes.—I am, etc.,

PAUL CAVE.

London, W.1, March 26th.

THE CIRCULATION UNDER THE SPHYGMOMANOMETER CUFF.

SIR,—In respect of Sir James Barr's second letter (*British Medical Journal*, March 9th, p. 475), I do not think that any further comments are called for from me; it remains that I can only regret that he did not give his consideration to my *argument* and give me the benefit of his criticisms. Professor Leonard Hill's letter, on the other hand, has interested me a great deal. It is, however, very difficult, in a description, to follow all the details of a complicated apparatus, and I feel that only careful study of the apparatus *in situ* and *in actu* can suffice to do justice to the experiment and the experimenter. I am not clear whether, in all the observations on the frog's web, the web itself is under direct pressure or not. If *not*, then in these the phenomena observed would correspond rather to those witnessed in the segment of the arm distal to the cuff, whereas my main argument regards that which happens in the cuff segment; this is precisely where the importance of direct inspection comes in.

Accepting, on Professor Hill's authority, the essential correspondence of the working of his apparatus with that of the sphygmomanometer, I note that he describes minutely the effects of a rising pressure applied to the frog's leg and observed in the web of the foot; it is to these observations that I wish to draw particular attention, as they seem to me to bear out certain conclusions which I had come to, and which are vital to my argument. Let me first state these conclusions as briefly as possible.

1. The primary effect of loading the surface of the cuff segment must be to empty completely, and more or less extensively, the veins of this segment, and so to cut off the escape of a certain bulk of blood via the veins. The absence of any impediment, towards the heart, exacts this conclusion.

2. The subsequent effects of the continued rise of the cuff pressure may be divided into two stages. Stage I, which ends at the point when the cuff pressure becomes equal to the pressure in the brachial artery. When this happens there is complete stasis throughout the trunk and branchings of the brachial artery in the cuff segment. It is to be noted that, the opposing forces being in exact equilibrium, the channels and orifices of the artery are still fully patent, there being no surplus of force to compress them. Stage II, which, beginning with stasis and open channels, ends with the disappearance of the pulse at the wrist. The whole duration of this stage is occupied by a summation of increments of pressure *in excess* of the intra-arterial pressure, which remains a constant. The first, smallest rise destroys the equilibrium present at the end of Stage I, and thence onwards the volume of blood under consideration is in the grip of a rising unopposed pressure, and it begins to move along the line of least resistance—that is, towards the open mouth of the brachial artery at the upper edge of the cuff. The blood, being as it were encompassed by the extravascular surplus pressure, must move *en masse*, and with each rise, however imperceptible in its beginnings this movement may be, there will be some escape of blood from the orifice of the brachial artery and a corresponding emptying of the outlying capillaries and arterioles at the periphery of the blood mass. In the course of time such a process continued would express the whole of the imprisoned blood, for the grip is trying all the time to obliterate the arterial channels, but this cannot take place until the whole of the blood is expelled. It is to be noted particularly that this expression is by a *reversed* flow, and that it is the very force of the retrograde movement which maintains the open door of the arterial channels.

In the course of an ordinary blood-pressure estimation, so brief is the period of Stage II and so slight are the forces engaged (a few millimetres of mercury measuring the effective surplus pressure), it is probable that the naked eye would not recognize any change in calibre of the brachial artery and its chief branchings, even at the conclusion of this stage. But if it were possible to call in the microscope to our aid and bring it to bear on the peripheral capillaries of the isolated blood mass instead of the main trunk—what then?

It is just here that Professor Hill's evidence comes in respecting the minute movements of the blood in the web of the frog's foot, under conditions which reproduce those which the sphygmomanometer imposes. For he shows, in the first place, the presence of an isolated—that is, *imprisoned*—mass of blood; and, secondly, he shows it in process of evacuation by a *reversed* flow; it is this reversed flow which proves the isolation, since it points to closed veins. All this takes place under a rising extravascular pressure. Here are his words, after describing how, under the increasing pressure, first one capillary loop is emptied, then another: "If the pressure be now raised further the flow ceases in more and more capillaries and venules, and finally in all, and in the arterioles." A little further on he says: "During the expression and blanching of the web the flow in the arterioles is reversed." *But this reversed flow is proof positive of open arterial channels*; it would be impossible with an obliterated main artery.

Need I say more? I craved the *visio oculorum* of Bacon—it seems to me that Professor Hill meets my desire.

In conclusion, may I appeal to my colleagues—physiologists and physicians—in the name of science to look into this matter, which is and should be entirely impersonal. I am convinced that a sectional obliteration of the trunk of the brachial as at present held and taught is wholly untenable, but my argument may be at fault. Is it too much to ask that it be examined? I would repeat here that the question of the patency of the arteries raises a definite practical issue.—I am, etc.,

London, March 19th. HARRINGTON SAINSBURY.

SIR,—In the discussion on this subject Dr. Harrington Sainsbury, Sir James Barr, and Dr. Leonard Hill do not mention the simplest and surest way of *seeing* by means of the ophthalmoscope what happens to the compressed artery.

If the arterial pulse is produced on the disc by finger pressure, or by the dynamometer of Baillart, the observer will see the arteries collapsed and refilling with blood only when the systolic wave is entering them. By increasing the pressure still more the arteries will be seen to remain collapsed and empty all the time, as the systolic wave will not be able to enter them. The same applies to the retinal veins, but the necessary pressure on the eyeball is, of course, a very slight one. The colloids of the eye are even more incompressible to a certain degree than those of the hand, because they are surrounded by a rigid sclera.

It is, in my opinion, the best proof that the portion of the artery does collapse and remains empty under a pressure locally applied and higher than the systolic one.—I am, etc.,

London, E.1, March 8th. N. PINES, M.B.

EFFECT OF OBSTRUCTED RESPIRATION ON HEART AND LUNGS.

SIR,—The interesting paper by Drs. Crowden and Harris in your issue of March 9th (p. 439) raises several points of importance to the practising radiologist. Their statement that the ideal radiograph of the chest requires an exposure of one-hundredth to one-sixtieth of a second is correct, but this exposure is by no means outside the range of most hospital *x*-ray equipments. At a distance of 30 inches with a 10 kw. transformer and any type of tube it is a comparatively simple procedure to photograph a chest in one-sixtieth of a second. At 2 metres distance it is less easy, and requires a tube capable of standing a very heavy load. There are many such tubes on the market to-day. In both instances, however, it is necessary to use a hard ray, and the resulting picture is by no means ideal.

Experiments, spread over several years at the Royal Chest Hospital, with the object of discovering the ideal chest radiograph, have led to the following conclusions. The ideal chest radiograph should show: (*a*) the heart outlines clearly and sharply; (*b*) the superior vena cava; (*c*) one or both subclavian arteries; and (*d*) the normal interlobar pleura between the right upper and middle lobes. On such a picture it is possible largely to differentiate between the vascular and bronchial markings in the lungs, and, more important still, the earliest focus of tuberculosis will be visible.

A radiograph fulfilling these criteria can be obtained by employing the following technique. The photograph is taken in the erect position at 2 metres distance. The exposure, made during moderate inspiration, is one-twenty-fifth of a second, the voltage 55 kv. effective, and the milliamperage 150 to 160. The tube is of the line focus type.

This technique is also the correct one for obtaining accurate heart measurements; the phase of the cardiac cycle during which the exposure is made causes only a negligible increase in the radiographic size of the heart, which can be checked. The size of the heart can always be checked by comparing its total width with the total width of the chest. The ratio, which is constant in health, is 1 to 1.9 in females and children, and 1 to 2 in males.

Drs. Crowden and Harris are apparently unaware of this factor, known as the heart-lung coefficient, and appear to think that the terms "dilated heart," "peribronchial fibrosis," and "increased hilum shadow" are the unscientific jargon of the radiologist which "may have to be abandoned." These terms have been abandoned for many years by radiologists with "chest" experience. The term "increased hilum shadow" indicates poor technique, for the separate structures forming the hilum are all visible on a good picture. Peribronchial fibrosis is now diagnosed only when it is present, which is rare, except in certain forms of phthisis.

Examination of 8,000 chests in the erect position has not, in the Royal Chest Hospital, been followed by one case of either dizziness or fainting. The ventilation of the authors' *x*-ray room or perhaps an uncomfortable position for their patients in the apparatus may be responsible for the malaise so lightly attributed to the influence of respiration on the circulation.—I am, etc.,

London, W.1, March 12th. PETER KERLEY.

UNIVERSITY OF LONDON PARLIAMENTARY REPRESENTATION.

SIR,—A note in the *Journal* of March 23rd (p. 581) states that three members of the University of London Conservative and Unionist Association executive are prepared to support Dr. E. Graham Little in his independent candidature at the forthcoming General Election. As this statement is inaccurate, perhaps you will allow me to say that the president, fourteen vice-presidents, every one of the eleven members of the executive committee, and the two honorary secretaries of the association, totalling twenty-eight persons, are opposed to the return of Dr. Graham Little, and for the following among other cogent reasons:

1. In 1924 Dr. Little, at the instance of a non-political body of graduates, saw fit to oppose the constitutionally selected candidate, Sir John Rose Bradford, K.C.M.G., since elected President of the Royal College of Physicians of London, and this *after* he had given a written statement that he would support Sir John.

2. In that year he stood as an Independent, was elected as an Independent by the narrow majority of 389 over Sir John Rose Bradford, has sat in the House as an Independent, and must stand again as an Independent.

3. It was as an Independent that he moved the rejection of the Government's University of London Bill, his motion being negatived without a division. This tends to prove as true what appeared in your issue of January 5th, 1929 (*Supplement*, p. 5): "an 'independent M.P.' does not exert much influence in the House. . . . He is ignored by the Whips, and can rarely influence the House . . ." concerning the value of an independent member of the House of Commons.

4. Dr. Graham Little has derided the scheme of Lord Dawson for the co-ordination of medical services on more than one occasion.

5. He has opposed the scheme of the British Medical Association for the same, and when he seconded, at the Representative Meeting at Cardiff in July, 1928, an amendment which had the promise of wrecking the whole scheme, this amendment was lost by an absolutely crushing majority.

It should be known to all medical graduates of the University of London that the Conservative and Unionist Association of the University in general meeting duly summoned has in a manner constitutional selected as the prospective candidate at the forthcoming General Election Sir John Gilbert, K.B.E., B.A., a member of the Senate of the University, and a late chairman of the London County Council, and that this selection carries with it the full support of the Conservative and Unionist Central Office.

It is understood that there will be a Liberal candidate, and probably other independent candidates besides Dr. Little, but the seat cannot be lost to the Conservative party, as asserted by Dr. Little's supporters, but can be regained for the party if all Conservative graduates vote for Sir John Gilbert.—I am, etc.,

W. MCADAM ECCLES,
Chairman, University of London Conservative and Unionist Association.

March 25th.

OPPORTUNITIES FOR MEDICAL WOMEN IN CANADA.

SIR,—In the notice of the meeting of the Medical Women's Federation, in your issue of March 16th (p. 507), I am reported as saying that the opportunities for gynaecological practice in Alberta, Canada, were "very good" for medical women.

I did not say this, but only that those who had started by working in the more remote country districts might later find opportunities in the smaller, but growing, towns. I further suggested that anyone contemplating private practice should first inquire of the secretary, Alberta Medical Association, as to the possibilities before going out.—I am, etc.,

West Clandon, March 25th. E. M. JOHNSTONE.

Obituary.

A. E. CUMBERBATCH, M.B., F.R.C.S.,

Consulting Aural Surgeon, St. Bartholomew's Hospital.

WE regret to record the death, on March 25th, at the age of 82, of Mr. A. E. Cumberbatch, whose long life was spent almost entirely in the service of medicine. We are indebted to Mr. L. A. Lawrence for the following particulars.

Cumberbatch was a Bart's man, and during his studentship at the hospital won the Kirkes gold medal. In 1870 he obtained the diploma M.R.C.S., and in the following year graduated M.B.Lond.; in 1872 he became F.R.C.S. He held the usual house appointments, and was, I believe, house-surgeon to Sir William Savory, after which he transferred to the dissecting rooms as demonstrator of anatomy. He was well qualified for the post, as he had a most intimate knowledge of this subject. It was a pleasure to be helped by him, and he gave of his best. The little leisure from the "rooms" was spent in helping John Langton, who was in charge of "ears." In 1882 the demonstratorship in ears held by Langton was promoted to a special department and placed under the care of Cumberbatch, who had resigned the "rooms." He was the first man who was not on the medical or surgical staff and yet was placed in full charge of a special department.

He had to do practically all the work himself, but was occasionally helped by someone who took an interest in ears. The department was held in a corner of the large general surgery, partitioned off on ear days. The partitions did not cut off the usual noises of a large surgery. The work was done standing. There were only two lamps and two wash-basins. In this place Cumberbatch contrived to see all the patients and to instruct the few students who came to learn. In after years dressers were added to the department. The new buildings at the hospital brought new vigour to the ear department, and Cumberbatch was given permanent assistance, which enabled him to devote more time to teaching. He resigned the appointment in 1908, and was made consulting aural surgeon and a governor of the hospital. The war brought him back to active work in the ear department. He was also aural surgeon to the National Hospital, Queen Square. His large private practice occupied him very fully till the last few years, when he retired to Sarratt in Hertfordshire, where he died.

Cumberbatch had many hobbies; he played a creditable game of tennis, and was a good billiard player. That lightness of touch which he showed in the dissecting rooms and the operating theatre stood him in good stead here. He loved golf, and was very keen about it till old age got the better. Many stories could be told of him on the links. One of his curious ways was to putt with a driver, and to putt well, too—all due to his deft hands. He was a collector of many things, among them stamps and oriental porcelain; he was somewhat of an authority on both.

Cumberbatch was not a voluminous writer. *Walsham's Surgery* owes something to him. He was one of the founders of the Otological Society of Great Britain and Ireland, and its treasurer at one time, and also its president. He took an active part in the International Otological Congress held in London in 1899.

JOSEPH RODERICK SUTHERLAND, M.B., CH.B.,

Superintendent, County Orthopaedic Hospital, Stonehouse.

BY the death of Dr. J. R. Sutherland, superintendent of the County Orthopaedic Hospital, Stonehouse, Lanarkshire has lost one of its ablest and best-known physicians. Joseph Roderick Sutherland was educated at the Glasgow High School and later at Glasgow University, where he received his medical education and graduated M.B., Ch.B. in 1905. In 1907 he obtained the diplomas M.R.C.S.Eng. and L.R.C.P.Lond., D.P.H.Camb. in 1912, and B.Sc. (Public Health) Glasgow in 1914. After holding resident posts at the Blackburn Infirmary, the Royal Infirmary, Glasgow, Glasgow Maternity Hospital, the Glasgow Eye Infirmary, and Woodilee Asylum, and a post as assistant bacteriologist to the Corporation of Glasgow, he was in

1912 appointed medical superintendent of the County Sanatorium, Stonehouse. Following a period of war service in France he returned to tuberculosis work, and after a long struggle helped to make the County of Lanark Orthopaedic Hospital one of the foremost institutions of its kind in the country. Sutherland possessed a retentive memory and an alert analytical mind, and his wide and varied knowledge of English literature and art made him a delightful companion. He was a fine yachtsman, and used to spend his vacations exploring the lochs of the West Highlands. His funeral, attended by representatives of all classes of the community, was evidence of the affection and esteem in which he was held.

A colleague writes: The passing of Dr. Joseph Sutherland is a sad event for those whose privilege it was to know him personally. His death, at the comparatively early age of 46, when, it might be said, only half his useful life had been spent, creates a gap in the ranks of the skilled orthopaedic surgeon which it will be difficult to fill. During his tenure of office at Stonehouse, Dr. Sutherland applied himself devotedly to the care of the cripple from surgical tuberculosis, and sometimes from very unpromising human material obtained very good results. He had a genius for "construction," and this was shown in plaster and celluloid work of the highest order. Not infrequently he spent his holidays visiting English and Continental centres in order to keep himself abreast of the times, and he followed the literature closely. Stonehouse was a resort to which fellow workers came to see Sutherland's methods. He was adored by his patients, and relatives put implicit and well-founded faith in him.

The following well-known foreign medical men have recently died: Professor DOMENICO BARDUZZI, formerly director of the clinic of dermatology and syphilology at Siena; Professor DOMENICO MAJOCCHI formerly director of the clinic of dermatology and syphilis at Bologna; Professor ERNESTO TRICOMI, director of the surgical clinic at Bologna, aged 70; Dr. VALENTINO GRANDIS, professor of physiology at Genoa; Professor H. DREESEMANN, a Düsseldorf surgeon; Dr. MAXIMOW, professor of normal anatomy at Chicago and an eminent histologist, aged 54; and Dr. MANUEL QUINTELA, professor of oto-rhino-laryngology in the University of Montevideo, aged 63.

Universities and Colleges.

UNIVERSITY OF LONDON.

COURSE IN MENTAL DEFICIENCY.

A COURSE of lectures for medical practitioners on mental deficiency and other mental conditions closely allied to it, supplemented by a course of clinical instruction, has been arranged by the University Extension Board in co-operation with the Central Association for Mental Welfare. The course is divided into Parts I and II, the first starting on May 27th and closing on June 1st and the second commencing on June 3rd and terminating on June 8th. The whole course may be taken, or the two parts taken separately. There is a registration fee of 10s. 6d.; the fee for the whole course is £5 5s., or £3 3s. for each part. The course is based on the requirements for the University of London diploma in psychological medicine, and is intended for qualified practitioners, more especially for those engaged as school medical officers, certifying officers to local authorities under the Mental Deficiency Acts, or as medical officers of institutions. All communications with reference to the course should be addressed to Miss Evelyn Fox, care of University Extension Department, University of London, South Kensington, S.W.7.

UNIVERSITY OF DURHAM.

AT the convocation held on March 22nd the following degrees were conferred:

M.B., B.S.—A. Davis, Katharine M. Girling, J. A. Lennox, D. C. Livingston, W. Mair, J. H. F. Pankhurst, J. H. Pool, J. W. M. Stevenson, H. Willcox.

UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

D.P.H.—*Part II:* A. Anderson, Helen G. M. Bennett, Mary Evans, J. J. O'Reilly, Mary I. Prentice, Marjorie Reekie, Kathleen Sheehan.

UNIVERSITY OF GLASGOW.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—*F. B. Anderson, Ida E. Ashby, P. Barr, Jean M. Barrowman, R. S. P. Begg, R. P. Boyd, W. P. Brown, A. M. Campbell, Ellen J. R. Campbell, I. S. Campbell, D. T. Clark, W. A. Clark, J. S. Craig, T. Dunlop, J. Fairey, R. Forrest, Isobel C. Fraser, P. A. Gallen, W. S. Gardner, Annie R. Greig, T. M. Haughie, D. L. Henderson, H. W. Laing, J. W. Laird, L. W. Laurenson, R. H. Leishman, D. C. Liddle, J. H. M'Broom, D. R. M'Calman, W. D. C. M'Crorie, J. M'Michael, W. J. M'Neish, Georgina A. M'Nicol, A. F. Maguire, J. L. Mayer, T. R. Murray, A. J. Nairn, Mary S. Nicholson, J. P. O'Hear, Jean B. Parker, T. F. Rodger, †M. M. Scott, J. G. Slimon, W. Smith, J. Stewart, J. Taylor, H. R. Weir, *A. T. Wilson, H. Wyers, *†A. M. Wyllie.

* Distinction in surgery. † Distinction in medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A MEETING of the Royal College of Physicians of London was held on March 25th.

Sir John Rose Bradford, K.C.M.G., C.B., M.D., F.R.S., was re-elected President.

Dr. J. W. Carr was appointed a representative of the College on the Professional Classes Aid Council.

Diplomas in Tropical Medicine and Hygiene and in Ophthalmic Medicine and Surgery were granted jointly with the Royal College of Surgeons to 44 and 25 candidates respectively. (The names of the successful candidates were published in the report of the meeting of the Royal College of Surgeons of England printed in our issue of March 23rd, page 581.)

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—K. Girgis (Section II), D. H. Haler, H. H. Lakin, A. W. Tam.
MEDICINE.—A. Clark, J. M. Connor, R. W. Goldsbrough, R. W. Scanlon.
FORENSIC MEDICINE.—R. W. Goldsbrough, R. K. Nandlal, K. M. Seedat.
MIDWIFERY.—I. M. Idda'i, V. R. D. Lahanmi, J. E. Moody, Z. Risk, A. W. Tam, E. O. Watson.

The diploma of the Society has been granted to Messrs. J. M. Connor, K. Girgis, D. H. Haler, and R. W. Scanlon.

The Services.

DEATHS IN THE SERVICES.

Fleet Surgeon James William Hambly Hawton, R.N. (ret.), died at Plymouth on March 19th, aged 78. After qualifying M.R.C.S. and L.S.A. in 1873, he entered the navy as surgeon on March 31st, 1874, became staff surgeon in 1886, and fleet surgeon in 1894, retiring in the following year. His last ship was H.M.S. *Edgar*, in China, in 1893–95.

Colonel Bernard James Newmarch, C.M.G., C.B.E., Australian Army Medical Corps (ret.), died recently at Sydney, aged 72. He was educated at King's College Hospital, qualifying M.R.C.S.Eng. in 1877, L.R.C.P.Lond. in 1881, and took the F.R.C.S.I. in 1908. After qualifying he held posts as house-surgeon and surgical registrar to King's College Hospital, and as medical superintendent of the Royal Free Hospital. After some ten years in London he went to Australia, and settled at Sydney, where he held the appointments of surgeon to the Sydney Hospital and to the Royal Neath Shore Hospital at Sydney. He served as a subaltern in the New South Wales contingent in the South African war, and rose to the rank of captain. At the beginning of the great war he was lieutenant-colonel commanding the 1st Field Ambulance of the Australian Army Medical Corps, and came to Europe with that unit. Later he commanded the 1st, and afterwards the 3rd, Australian General Hospital; he was promoted to the rank of colonel in 1917, and served at headquarters in London in 1917–19.

Lieut.-Colonel Thomas Samuel Lloyd-Barrow, R.A.M.C. (ret.), died at Weymouth in February, aged 86. He was born in London, on May 17th, 1842, the son of Inspector-General T. W. Barrow, A.M.D., was educated at St. George's, taking the M.D. at St. Andrews in 1862, and the M.R.C.S. and L.S.A. in 1863, and entered the army as assistant surgeon on March 31st, 1864. In the old regimental days he served in the 23rd Foot, now the Royal Welch Fusiliers, and in the 3rd Dragoon Guards. He became surgeon major on April 28th, 1876, and retired, with an honorary step, as brigade surgeon, on April 23rd, 1884. He took the additional name of Lloyd in 1881. He saw his first active service in the Kaffir war of 1851–52, at the early age of 9. He had accompanied his parents to the Cape, and was beleaguered in a frontier fort, garrisoned by the 2nd Foot, the Queen's West Surrey Regiment, with his father, for nine months. He again saw foreign, though not active, service with his father in Canada, in 1859–60. While in the army he served in the Egyptian war of 1882, was present at the battle of Tel-el-Kebir, and received the Egyptian medal and the Khedive's bronze star. He also received the thanks of the general commanding at Gibraltar, and of the director-general, A.M.D., for his services in a cholera epidemic at Gibraltar in 1865. He was a J.P. for Brecknock county. His family have contributed many officers to the A.M.D. and R.A.M.C. Besides his father and himself, his younger brothers, Lieut.-Colonel F. E. Barrow and Colonel H. J. W. Barrow, served in the R.A.M.C., and the last was the father of Major-General H. P. W. Barrow, C.M.G., D.S.O., A.M.S. He married Miss Bevan of Brecon, who died in 1911, leaving two sons.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

PARLIAMENT stands adjourned for the Easter recess. Before it rose, on March 27th, the Royal Assent was signified to the Local Government Act, 1929, for England and Wales, and to the Factory and Workshops (Cotton Cloth Factories) Act, as well as a number of Acts confirming provisional orders of the Ministry of Health. When the House of Commons reassembles, on April 15th, Mr. Churchill will introduce his Budget.

The prorogation of Parliament is commonly anticipated about Whitsuntide, and the dissolution will follow without delay.

Local Government (Scotland) Bill.

On March 26th the House of Lords was in committee on the Local Government (Scotland) Bill. Amendments to preserve the autonomy of the smaller burghs were defeated. One of these amendments proposed to raise to the status of a large burgh any burgh which, during the summer months, had a population in excess of 20,000. In resisting this amendment Lord AIRLIE, for the Government, said burghs did not have to provide for summer visitors the benefits of lunacy and mental deficiency services, nor even of public health services, since most epidemics were in the winter. Maternity and child welfare services also were not provided for summer visitors.

Clause 11 provides for the combination of two or more authorities if a district asylum or institution for mental defectives has been provided by a district board of control, whose functions under the bill are transferred to such authorities. Lord AIRLIE moved an amendment which would waive the obligation for combination if the authorities concerned and the General Board of Control for Scotland agreed otherwise. He said this was to meet the case of Paisley, where the parish council, which was also the board of control, had provided an asylum for the burgh of Paisley and for that small portion of Paisley parish which was in the county of Renfrew outside the burgh. The amendment would allow Paisley town council to buy out the interests of Renfrew county council in the asylum and run it exclusively for the burgh. The amendment was accepted.

In Clause 14, which deals with the preparation of administrative schemes by county councils, Lord AIRLIE moved to omit lunatics from the classes of persons for whose maintenance and treatment the scheme might provide by way of poor relief or by virtue of enactments other than the Poor Law Acts. He said that treatment of lunatics was provided under the Lunacy Acts and not under the Poor Law Acts. The House agreed to the deletion.

Clause 35 proposes that, unless the Department of Health otherwise agrees, the county medical officer of health shall become the health officer of any small burgh where that post falls vacant. Lord YOUNGER OF LECKIE moved an amended form of words regarding the appointment of the county medical officer and of the county sanitary inspector when vacancies occurred in similar posts in small burghs. He said it was desirable that the sanitary inspector should be under the orders of the county medical officer of health. Lord SALISBURY resisted the amendment, contending that the Secretary for Scotland should be left a discretion. Lord YOUNGER withdrew his amendment.

After other amendments had been discussed the bill passed through committee.

Treatment of Rheumatic Insured Persons and Children.—Mr. CHAMBERLAIN, replying to Brigadier-General Wright, on March 25th, said that all insured persons in Great Britain (with the almost negligible exception of voluntary contributors with an income exceeding £250 a year) were entitled to medical treatment. Under that benefit insured persons suffering from any form of rheumatism were entitled to receive from insurance practitioners such treatment as the practitioners considered to be proper and necessary, except treatment involving the application of special skill and experience of a degree or kind which general practitioners as a class could not reasonably be expected to possess. Further, if an insured person was a member of an approved society which had adopted additional benefit No. 10, and if that person received treatment as an in-patient of a hospital, the society might make payment towards the cost of his maintenance and treatment. As soon as suitable arrangements could be made under additional benefits Nos. 8 and 16, it would be open to societies to make payment towards the cost of any special form of treatment of rheumatism, either by a registered medical practitioner in accordance with an approved special scheme or through the agency of an approved charitable institution. On the same day Mr. CHAMBERLAIN told Brigadier-General Wright that no complete particulars were available to show what hospital accommodation had been set aside in the last twelve months for the treatment of acute rheumatism among children. For London, the Metropolitan Asylums Board had, during 1928, set aside 38 additional beds in their institutions for the treatment of rheumatic affections among children (including rheumatic fever, acute endocarditis, and chorea). The total number of beds provided by the Board for this purpose was 170 at the beginning of the present month, and they were providing 350 additional beds in buildings now in construction. Accommodation was also provided for children suffering from rheumatism in other hospitals, institutions, and schools for physically defective children recognized by the Board of Education, but the exact number of beds so provided was not available.

Preservation of Infant Life Bill.—This bill, which has already passed the Lords, was read a second time without debate in the House of Commons on March 25th and sent to a standing committee.

Lepers in India.—On March 25th Earl WINTERTON, replying to Sir R. Thomas, stated that the number of persons in India returned as lepers at the census of 1921 was 102,513, but it was probable that the real total was considerably in excess of that. Information was not available on the number of treatment centres now open in India. As public health was a transferred provincial subject, the matter was one for the local Governments and legislative councils. The Indian Council of the British Empire Leprosy Relief Association worked in co-operation with the provincial Governments and voluntary agencies, and in each province the local Governments either supported leper institutions or made a capitation grant to institutions under the administration of the Mission to Lepers. The Secretary for India had a distinguished medical adviser at the India Office, who was closely associated with the new remedy for leprosy.

"Cancer Cures."—Sir KINGSLEY WOOD told Viscount Sandon, on March 25th, that the Cardigan alleged cure for cancer was one of several alleged cancer cures regarding which the Minister of Health had made inquiries through the Departmental Committee on Cancer. No information of scientific value was obtained by those inquiries, and no report had been made dealing with the "cure."

Deaths in Oldchurch Hospital, Romford.—Mr. CHAMBERLAIN, replying on March 25th to Mr. March, said he had seen a report by the medical superintendent of the Oldchurch Hospital, Romford, that nearly a hundred deaths occurred there within three weeks, and that many of the lives might have been saved if it were not for overcrowding. In the report this officer stated that some of the deaths which occurred in February could have been avoided had the guardians taken some notice of his repeated advice with regard to the lack of accommodation. Proposals for the increased accommodation for cases of tuberculosis were submitted by the guardians in August of last year. After consultation with the Essex County Council Mr. Chamberlain had come to the conclusion that the provision of additional wards of the ordinary hospital type was necessary, and the guardians themselves adopted this view in a letter addressed to him on January 14th, when they made proposals for extensions. Arrangements had now been made for the immediate discussion of the necessary plans between the guardians' advisers and his officers. There had been no delay on his part in dealing with any proposals from the guardians.

Deaths due to Gas Poisoning.—Sir P. CUNLIFFE-LISTER, on March 26th, told Mr. Bowerman that his attention had been drawn to the fact that in the past fifteen years deaths due to gas poisoning had increased from 170 to 1,142; since the report of the Committee on Carbon Monoxide in 1921 the situation had been watched and relevant information collected. Of deaths due to gas poisoning, a large proportion were cases of suicide. He thought that a small but experienced committee should review the developments which had taken place since the Pearce Committee sat in 1921, and he proposed to appoint such a committee. Replying to a question by Mr. W. Thorne, Sir P. CUNLIFFE-LISTER said that in 1927 the number of suicides from gas poisoning was 943, and the other deaths from the same cause 150. He proposed to appoint the committee within a reasonable time.

London Lock Hospital.—Asked by Major Astor, on March 27th, what changes of administration he proposed as the result of the report of the committee of inquiry into the London Lock Hospital, Sir KINGSLEY WOOD replied that the hospital was a voluntary institution and responsibility for carrying out the recommendations of the committee rested not with Mr. Chamberlain but with the board of the hospital. Mr. Chamberlain had not yet received specific proposals from the board for its reconstitution, but he understood that it contemplated the inclusion of women on the board in future.

Radium.—Sir KINGSLEY WOOD, replying to Lieutenant Commander Kenworthy, on March 25th, said that the report of the subcommittee of the Committee of Civil Research on Radium and Radium Supplies had been received, and would be published in full shortly. A statement of the intentions of the Government in the matter would be made on the reassembling of Parliament.

Social Hygiene Propaganda.—In an answer given on March 27th to Captain Crookshank, Mr. AMERY said that a grant of £500 had been made to the British Social Hygiene Council to assist in organizing propaganda work in the colonies and elsewhere. The employment of this money was limited to specified services, such as the supply of films and of medical and educational literature. Payments out of the grant were only made to reimburse certified expenditure on these approved services. The grant had not been discussed with the Ministry of Health, which had no responsibility for such work in the colonies.

Notes in Brief.

At the end of 1928 the number of persons insured in Great Britain under the National Health Insurance Act was estimated to be 11,550,000 men and 5,400,000 women. These included 790,000 persons who, having reached 65 years of age, have ceased to be entitled to sickness and disablement benefit.

Mr. Herbert Williams states that, whereas before the war nine-tenths of the glass used in British optical instruments was of foreign manufacture, the same percentage of the glass now so used was British.

Medico-Legal.

ACQUITTAL OF MEDICAL MAN ON MANSLAUGHTER CHARGE.

At the Central Criminal Court, on March 27th, the jury, without leaving the box, found Dr. Daniel Evans Powell of High Street, Tooting, not guilty on an indictment charging him with the manslaughter of Mrs. Doris Ruth Simmons, and with intent to procure her miscarriage by an instrument or other means.

Mrs. Simmons died in St. James's Hospital on December 13th, and a *post-mortem* examination was made next day by Sir Bernard Spilsbury, in whose opinion an instrument had been used by a skilled person on or about November 23rd, leading to a septic abortion followed by inflammation of the kidneys and general septicaemia.

Dr. Powell, who pleaded not guilty and gave evidence on his own behalf, was defended by Sir Patrick Hastings, K.C., Mr. St. John Hutchinson, and Mr. John Maude. Mr. Eustace Fulton and Mr. Gerald Dodson represented the Director of Public Prosecutions.

Dr. F. J. McCann and Dr. Donald Roy, giving evidence for the defence, expressed the view that the circumstances leading to Mrs. Simmons's death were as consistent with natural causes as with the use of an instrument.

Mr. Justice Hawke, in his summing-up, referred to a complaint made by the defence that Dr. Powell had not been given an opportunity of being represented at the *post-mortem* examination; Sir Bernard Spilsbury's statement suggested to his lordship, however, that the coroner and not the police was responsible for this.

Medical News.

THE PRINCE OF WALES has accepted the invitation of the president, Sir Arthur Stanley, to become patron of the British Hospitals Association.

THE annual meeting of the Royal Medical Benevolent Fund will be held at 11, Chandos Street, W.1, on April 18th at 5 p.m., when the annual report and financial statement will be presented and the officers and committee elected for the current year.

THE following Chadwick Public Lectures have been arranged for this month and next. On Thursday, April 11th, at 5.30 p.m., Dr. J. F. C. Haslam will lecture at the Royal Sanitary Institute on "Health in British Guiana and the West Indies." On Tuesday, April 23rd, at 8 p.m., Mr. C. E. Stromeyer will Lecture at the Institution of Mechanical Engineers on "What health and civilization owe to engineering." On Thursday, May 16th, at 5.15 p.m., at the Royal Society of Arts, Sir Norman Walker will give the Malcolm Morris Memorial Lecture on "The progress of dermatology over 50 years." On Thursday, May 30th, at 5 p.m., Mr. H. V. Taylor will lecture at the Chelsea Physic Garden on "Supplies from the vegetable kingdom and the public health." Admission to these lectures is free and no tickets are required.

DR. HARRY CAMPBELL will give a lecture, under the auspices of the Food Education Society, on "Common errors in diet" on Wednesday, April 10th, at 3 p.m., at 29, Gordon Square, W.C.

A SPECIAL course of lectures and demonstrations in infants' diseases, for medical officers of welfare centres and others, will be held daily from 2 to 5 o'clock at the Infants Hospital, Vincent Square, Westminster, from May 27th to June 9th. The number attending the course will be limited to fifteen, and the fee will be three guineas. Further particulars can be obtained from the secretary of the Fellowship of Medicine, 1, Wimpole Street, W.1.

THE University College Committee will award in June, 1929, a Bayliss-Starling memorial scholarship of the value of about £120 (with exemption from tuition fees). The scholarship will be tenable for the session October, 1929, to July, 1930; it may be renewed by the College Committee for a second and for a third year in exceptional circumstances. Candidates must be graduates or undergraduates of the University of London or any other university approved by the College Committee for the purpose, and of suitable standing in science or medicine. The scholar will be required to follow a course of study approved by the Jodrell Professor of Physiology involving a training in the principles and methods of research in physiology and/or biochemistry. He will be exempted from tuition fees in following such a course of study, but he will be required to pay a registration fee, the Union Society subscription, and, if required by the College Committee, the cost of special apparatus and materials. Each candidate must submit to the Secretary of University College, Gower Street, W.C.1, on or before May 15th, a statement giving full particulars of his educational career and of his qualifications for entering on a course of training in the principles and methods of research.

THE Hutchinson triennial prize (value £60), open to full students of the London Hospital of not more than ten years' standing since registration as such, will be awarded in 1932 for the best dissertation on remote consequences of fracture of the spinal column. Dissertations must be delivered at the hospital not later than March 31st, 1932, and the award will be made within six months of this date. Further particulars may be obtained from the secretary, London Hospital Medical College, Whitechapel, E.

STEADY increase continues in the membership of the Pathological and Bacteriological Laboratory Assistants' Association, which now numbers over 500, and the annual report for 1927–28 points to a satisfactory extension of its activities in the form of lectures, demonstrations, and examinations. A new branch has been formed in Glasgow and a very successful conference was held at Cambridge last year. The lending library scheme enables members to borrow books at a nominal cost, and the employment bureau has again proved its usefulness, both to members desiring change of post and to employers requiring assistants. After three years as president Professor H. R. Dean has been succeeded by Professor W. W. C. Topley.

AMONG the medical congresses to be held during the year are: the third international congress of medicinal plants at Padua in the second half of June; the triennial congress of the International Society of Surgery at Warsaw, from July 22nd to 25th (further information can be obtained from the secretary, 72, Rue de la Loi, Brussels); the German orthopaedic congress at Munich on September 18th, when the chief subjects for discussion will be coxa vara and the end-results of congenital dislocation of the hip (further information can be obtained from the president, Professor Hoffmann, Karlstrasse 16, Munich); and the annual congress of the Italian Society of Hydrology and Climatology at Spezia from October 4th to 6th, under the presidency of Professor Devoto.

AN international medical congress on balneology and balneotherapeutics will be held in Carlsbad from September 15th to the 21st. Special facilities in connexion with railway travel and passport fees will be available. Further information may be obtained from Dr. Edgar Ganz, Carlsbad, Czechoslovakia.

WE have received the first issue of a new quarterly periodical entitled *Human Biology*, and described as a "record of research," which has been published in Baltimore under the editorial direction of Professor Raymond Pearl. The editorial board consists of distinguished scientists in European countries and Japan, as well as in the United States, and includes Professor Major Greenwood. The outlook of the new journal is indicated by the publication in its opening number of the first of a series of studies of the human constitution in its relation to disease, and articles on racial variations and mental capacity, the sex factor in infant mortality, biological philosophy and medicine, and persistent negro physical features. The journal may be obtained from Messrs. Warwick and York, East Centre Street, Baltimore, Maryland, the advance subscription price being 5 dollars a year.

THE March issue of the *Deutsche Zeitschrift für Chirurgie* has been dedicated to General Karl Ritter von Seydel, honorary professor in the medical faculty of Munich University and an eminent military surgeon.

THE opening of the tenth Salon des Médecins, which was to have taken place on April 21st (*Journal*, January 26th, p. 183), has been postponed till May 26th. Further information can be obtained from the secretary, Dr. Paul Rabier, 84, Rue Lecourbe, Paris XV^e^.

IN the sixteenth annual report of St. Andrew's Hospital, Dollis Hill, N.W.2, which is under the care of the Sisters of Mercy and the trustees of the Diocese of Westminster, an appeal is made for assistance towards the cost of extension, estimated at £30,000, of which some £7,000 has already been received. Although the normal number of beds is fifty-two, the average number of patients resident daily throughout 1928 was fifty-nine, and many deserving cases had to be refused. A new ward pavilion is in course of erection; it will consist of two wards of twelve beds each and an operating theatre. The building of the nurses' home has also begun; when completed this building will release at least fifteen extra beds in small private rooms in the present hospital. Although there is no out-patients' department, it was necessary to deal with 304 accidents and other urgent cases during the year. Patients are received for treatment in the wards, cubicles, and private rooms without any distinction as regards nationality or creed.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:
EDITOR of the *British Medical Journal, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

PROLONGED ADMINISTRATION OF CASCARA.

DR. L. J. HOBSON (Harrogate) writes: In reply to "Sigmoid's" inquiries (March 23rd, p. 584), I have taken, and also prescribed, cascara, as an extract, for some forty years for habitual constipation, and without any deleterious result at any period of its administration. Quite exceptionally, however, it has been withheld, owing to a history of some griping in its action. Otherwise the first condition insisted upon for its success has been a definite daily dosage of 4 grains in an adult at first, reducing to 3 grains, and in some cases to 2 grains, when this has at length proved a sufficient dose. I always give it in the form of the standardized tabloids, to be taken a few minutes before, and not after, the evening meal, which is the second cardinal condition to ensure a daily action on the morning following.

INCOME TAX.

"PERPLEXED" received from a patient a "gift of £100"; he had had to buy a house, and the cheque was given to assist him, as was explained in the donor's covering letter. Is this liable to income tax?

*** Gifts are not liable to income tax in the hands of the recipient; they are outside the scope of the tax. At the same time we should perhaps point out that if, when the gift was made, the patient in question had received professional attention for which a fee would ordinarily have been charged, but which was cancelled in the special circumstances, then it would seem reasonable for "Perplexed" to return for assessment a corresponding amount, as being in effect included in the £100 gift.

LETTERS, NOTES, ETC.

THE DOCTOR AND CHEMICAL WARFARE.

DR. ARTHUR T. JONES (Mountain Ash) writes with reference to Dr. Humphreys's letter on January 26th (p. 180): With the Covenant of the League of Nations and the Kellogg Pact, warfare of any kind, and especially chemical warfare, ought to be beyond the range of possibility. Such warfare, involving, as stated by Dr. Humphreys, the death of 5,000 in five minutes, is too horrible to contemplate, but poison gas let loose on a civil population or a whole community means nothing short of annihilation. Dr. Humphreys suggests that the British Medical Association should formulate some practical policy to meet the situation and to equip medical practitioners with antidotes for themselves and those in their care; I fear that, far from having an opportunity of exercising their skill or knowledge, they would probably all be huddled among the victims. Surely we should aim at something higher and more rational. If, as medical men, we believe that prevention is better than cure, we should act accordingly. It seems to me quite incongruous that, side by side with laboratories engaged in discovering the cause and cure of cancer and other scourges of mankind, others should be engaged in research designed to invent poison gases for chemical warfare. If there is any duty incumbent on us individually as medical practitioners, and collectively as an Association, it is that we should take the lead in creating public opinion for the prohibition of research in and manufacture of poison gas. Even if we cannot hope to abolish war completely, we should so foster this public opinion as to make it a potent factor in the enactment of international legislation, by which chemical warfare will be condemned as an illegal procedure.

UNUSUAL SYMPTOMS OF PROSTATE ENLARGEMENT.

DR. MARSHALL HAVER (Driffield) writes: Mr. Grey Turner's article of February 9th (p. 233) and "J. C.'s" note of March 23rd (p. 584) prompts me to send the following. Recently I had a very old patient, since dead, with prostate enlargement, who had used the catheter for five years. He often described to me a curious sensation he experienced in the soles of the feet occurring the instant micturition ceased. He had some difficulty in describing the sensation, but likened it to a feather lightly brushing and tickling the soles. The sensation was momentary and invariable, and amused him greatly. I have often wondered what reflex connexion there is between the bladder and the soles of the feet.

"AURIST" writes: I have similar symptoms to those mentioned by "J. C." (March 23rd, p. 584) when my bladder is distended, especially with pale urine of low specific gravity. I get neuralgic pains in the palms of the hands and fingers on urination.

ANAESTHESIA FOR COLLES'S FRACTURE.

DR. E. J. CHAMBERS (Doncaster) writes: I read the article on March 16th (p. 491) with surprise that Mr. Blundell Bankhart thinks so little of gas-oxygen anaesthesia, as carried out with an efficient machine. There is no "luck" about it; nor is there any difficulty in treating a Colles's fracture with the patient anaesthetized by this method, the safety of which is acknowledged by all. A deep chloroform or ether anaesthesia is certainly, in my opinion, subjecting the patient to unjustifiable risk and considerable avoidable discomfort.

QUININE IN INFLUENZA.

DR. A. H. DODD (Bournemouth) writes: During the earlier epidemics of influenza I was particularly sensitive and a frequent victim, necessitating many locums. On the advice of one who had himself been in practice for many years, I tried quinine as a prophylactic. Always afterwards in the late autumn, or at the slightest hint of return of an epidemic, I was in the habit of taking one or two grains of quinine sulphate (preferably sugar-coated pills or uncoated tabloids, both being so easily soluble and reliable) the first thing in the morning on rising, with a tumbler of hot water. I went eight years without another attack, then had a slight one, followed by another five years' freedom. I used to continue taking the quinine for about four to five months. I have frequently advised others to follow this line, and with great success when persevered with. In one boarding school, at my recommendation, the head mistress gave it to all, and not a single case of illness occurred during one of the severe epidemics.

THE USE OF THE TONSILS.

DR. J. MCNAMARA (London, W.) writes: In your issue of March 23rd (p. 543) Dr. Irwin Moore is quoted as stating that "the general opinion is that after the age of 5 years nearly all tonsils are useless and are in the majority of cases a menace to health." That the ring of lymphatic tissue including the tonsils, with the lingual and pharyngeal tonsils, which, like a defensive bulwark, surrounds the entrance to the body, is useless after five years, is *a priori* improbable. I know two children who had their tonsils removed when well over 5 years old. One of these within a year, the other within a few years, developed an irregular rise of temperature, with chests shown by *x*-ray examination to be crowded with enlarged tuberculous glands. I cannot say whether the tuberculous infection of these glands after removal of the tonsils was *post hoc* or *propter hoc*, but the experience is suggestive, and if any readers have had a like experience its publication would be useful.

AN OPTICAL PHENOMENON.

DR. W. F. LLOYD (Windsor) writes: If an object such as an isolated pane of glass against a dull sky, or the disc of the moon, is looked at, first with one eye, and then with both, two changes are observed: the object becomes brighter and also larger. One might expect it to appear brighter, since the brain is receiving twice the amount of stimulation, but why does it seem larger? Is it that the images on the retinae do not quite correspond? In that case one would expect a hazy outline, but the outline seems to be quite definite. In my case the object seems to increase in size about one-twelfth of its diameter.

A DISCLAIMER.

DR. F. M. WALKER (Ayr) writes to state that the recent appearance of his name in a local newspaper in connexion with a case of blood transfusion was without his knowledge or approval.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 49, 50, 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 83.

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THE injurious action of caffein, to which the ailing, reconvalescents and those in good health become liable by the habitual or excessive consumption of coffee and tea, is causing an increased interest in the medical world. There is already a comprehensive literature dealing with this subject; in many cases it absolutely bans the consumption of beverages containing caffein.

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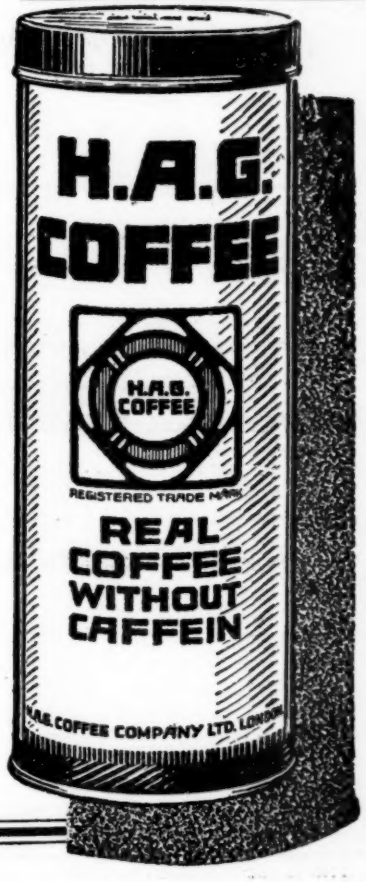

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When these internal secretions begin to fail at the period of the menopause, Hormotone acts both by substitution and homostimulation.

Dose: One or two tablets three times daily.

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